TYSAROWSKI, W.; KWIEK, S.; MIGDALSKA, B.

Behavior of hemoproteins in the presence of acid-fast bacilli. II. Effect of oxy- and methemoglobin on respiration of Mycobacterium phlei and Mycobacterium tuberculosis strain C. Acta microb. polon 5 no.1-2:65-68 1956.

1. Z Zakladu Biochemii i Mikrobiologii Instytutu Gruzlicy w Warszawie.

(HEMOGLOBIN, effects,
oxy- & methemoglobin on M. phlei & M. tuberc. resp. (Pol))
(MYCOBACTERIUM, effect of drugs on,
phlei, oxy-& methemoglobin (Pol))
(MYCOBACTERIUM TUBERCULOSIS, effect of drugs on,
oxy- & methemoglobin (Pol))

TYSAROWSKI, Wieslaw; KWIEK, Stanislaw; MIGDALSKA, Barbara

The behavior of heomproteins in the presence of acid resistant bacteria. I. Reduction of methemoglobin in clutures of Tubercle bacilli. Gruzlica 23 no.1:13-20 Jan '55.

1. Z Zakladu Biochemii.Kierownik: prof.dr G. Bagdasarian i Zakladu Mikrobiologii Kierownik: doc.dr M. Buraszewska. Instytutu Gruzlicy, Dyrektor: prof.dr J. Misiewicz. Warszawa, Plocka 26.

(MYCOBACTERIUM TUBERCULOSIS, culture
methemoglobin reduction to hemoglobin)
(HEMOGLOBIN
methemoglobin reduction in M. tuberc.culture

MIGDALOVICH, F. A.

36415. Streptokkovaya rekurrentnaya infektsiya na skarlatinoznykh otdelenivakh. Voprosy pediatrii i okhrany materinstva i detstva. 1956, vyp. 5, s. 25-27

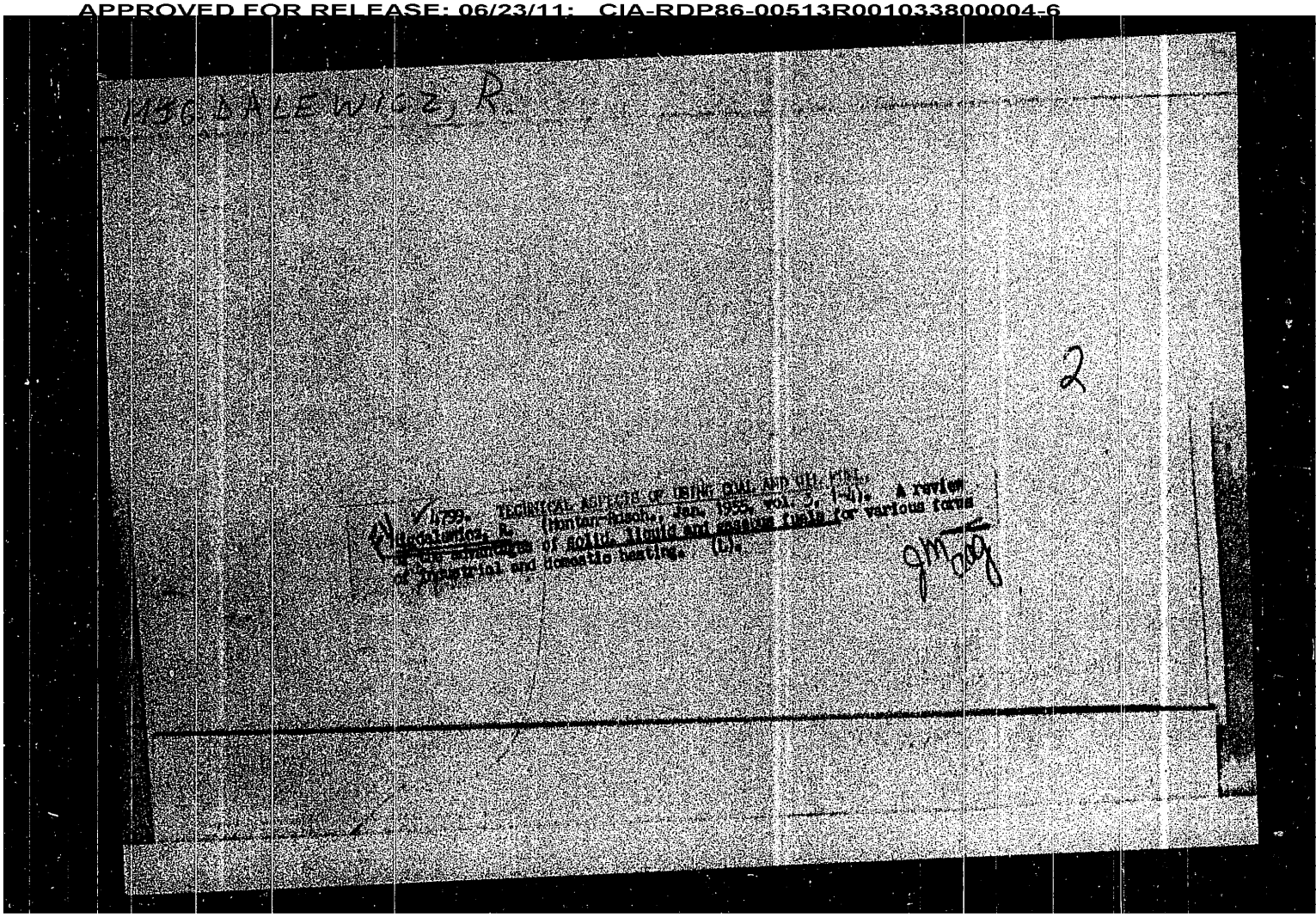
MIGDALOVICH, F. A., KURILOVA, O. M., I RAKHLINA, I. L.

SO: Letopis' Zhurnal'nykh Statey, No. 49, 1956

GEFTER, S.P.; MIGDALOVICH, B.M.; GOLUBEVA, T.S.

Skin tuberculin sensitivity in pulmonary tuberculosis during antibacterial therapy. Probl. tub. 41. no.3:34-37'63. (MIRA 16:9)

1. Iz kafedry legochnogo tuberkuleza (zav. - prof. A. Ya. TSigel'nik) I Leningradskogo meditsinskogo instituta imeni akademika I.P.Pavlova.
(TUBERCULIN--TESTING) (CHEMOTHERAPY)



MIGDALEWICZ, R

3690. SARRE-LORRAINE COALS. Migdalewicz, R. (Montan-Rdsch., Dec. 1954, vol. 2, 318-320). Classification of Sarre and Lorraine coals is discussed and analyses are tabulated. Coke characteristics of these coals and production figures are given. (L).

FU

9

L 2232-66

ACCESSION NR: AP5020250

particle L-forbidden transitions in which the orbital angular momentum of the quasi-particle changes by two units. "The authors thank Yu. V. Gaponov and E. Ye. Sapershteyn for valuable discussions." Orig. art. has: 18 formulas and 1 table.

ASSOCIATION: Moskovskiy inzhenerno-fizicheskiy institut (Moscow Engineering-Physics Institute)

SUBMITTED: 29Dec64

ENCL: 00

SUB CODE: NP

NR REF SOV: 005

OTHER: 003

Card 2/2

L 2232-66 EWT(m) DIAAP

ACCESSION NR: AP5020250 UR/0367/65/002/001/0028/0034

AUTHOR: Migdal, A. B.; Khodel', V. A. 44,55

TITLE: Beta decay in nuclei 44,55

SOURCE: Yadernaya fizika, v. 2, no. 1, 1965, 28-34

TOPIC TAGS: Beta decay, particle interaction, nuclear spin, forbidden transition

ABSTRACT: The method of interacting quasiparticles, developed by one of the authors (Migdal, Nucl. Phys. v. 57, 29, 1964), is used to analyze beta decay in nuclei. The probabilities for the allowed beta transitions are calculated, with account taken of the interaction between quasiparticles, by calculating the matrix elements for the Fermi and Gamow-Teller transitions. It is shown that the Fermi matrix elements can be calculated accurately without taking Coulomb interaction into account. In the case of Gamow-Teller transitions in mirror nuclei, the field satisfies an equation identical with that for the polarizability of the daughter nucleus in the field. The presence of a spin-spin interaction between quasiparticles in Gamow-Teller transitions and to the appearance of the group of single-

Card 1/2

MIGDAL, Arkadiy Beynusovich (1911-); DUBNOVA, V.Ya., red.

[Theory of finite Fermi systems and the properties of atomic nuclei] Teoriia konechnykh fermi-sistem i svoistva atomnykh iader. Moskva, Nauka, 1965. 572 p. (MIRA 18:12)

1. Chlen-korrespondent AN SSSR (for Migdal).

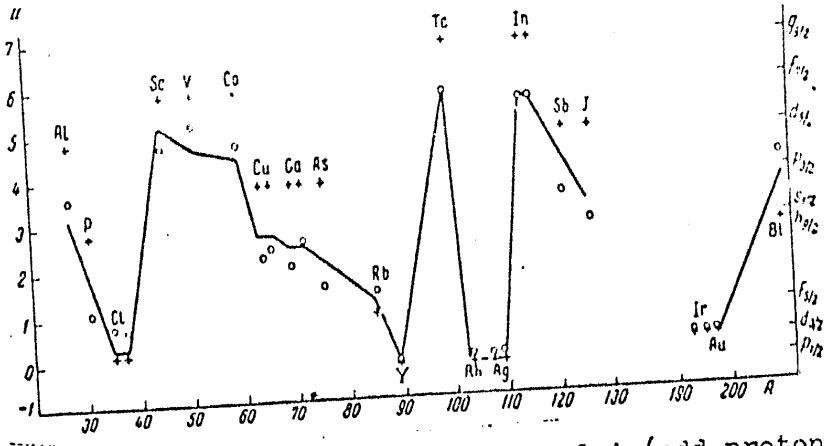
MIGDAL, Arkadiy Benediktovich; FAYNBOYM, I.B., red.

[Modern approach to nuclear theory] Sovremennyi podkhod k teorii iadra. Moskva, Znanie, 1965. 42 p. (Novoe v zhizni, nauke, tekhnike. IX Seriia: Fizika, matematika, astronomiia, no.14) (MIRA 18:7)

1. Chlen-korrespondent AN SSSR (for Migdal).

ENCLOSURE: 02

ACCESSION NR: AP4037582



Magnetic moments of spherical nuclei (odd proton)
O - experiment, + - calculated from Schmidt's curves

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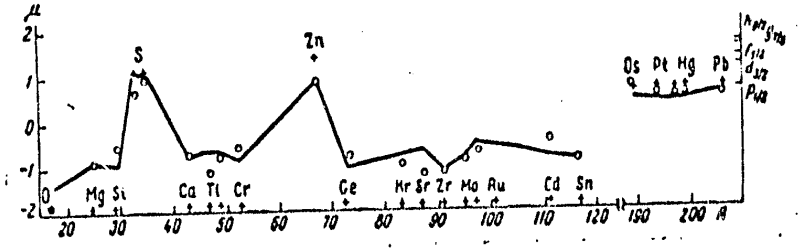
Card

ACCESSION NR: AP4037582

ENCLOSURE: 01



Magnetic moments of spherical nuclei (odd neutron)
O -- experiment, + - data from Schmidt curves

4/5
Card

ACCESSION NR: AP4037582

ASSOCIATION: None

SUBMITTED: 01Aug63 DATE ACQ: 09Jun64 ENCL: 02

SUB CODE: GP, NP NR REF SOV: 005 OTHER: 005

Card 3/5

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800004-6

ACCESSION NR: AP4037582

tion, the spin-orbit interaction gives rise to terms proportional to the orbital angular momentum of the odd particle, which is shown to make in some cases an appreciable contribution to the magnetic moment. A simple expression is derived for the sum of the magnetic moments of the neutron and the proton. The magnetic moments of the spherical nuclei obtained from the expression derived in this work agree well with experiment and with calculations made by others. The spin-spin interaction constant for the magnetic moments of deformed nuclei are found to coincide with those obtained from magnetic moments of spherical nuclei. The equations obtained can be used to calculate the magnetic form factors of the nuclei, and in particular, to determine the nuclear magnetic multipoles. "The author is grateful to A. A. Lushnikov, E. E. Sapershteyn, M. A. Troitskiy, and V. A. Khodel' for interesting discussion, and to V. N. Guman for compiling the table of integrals of the radial functions." Orig. art. has: 2 figures, 67 formulas, and 1 table.

Card 2/5

ACCESSION NR: AP4037582 S/0056/64/046/005/1680/1699

AUTHOR: Migdal, A. B.

TITLE: Magnetic moments of nuclei

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1680-1699

TOPIC TAGS: nuclear magnetic moment, Fermi surface, spin orbit coupling, spin spin coupling, deformed nucleus

ABSTRACT: As a further development of his quantitative approach to the calculation of nuclear phenomena (ZhETF v. 43, 1940, 1962; v. 44, 1703, 1963; v. 45, 1036, 1963), based on the introduction of constants which characterize the properties of nuclear matter and which are the same for all nuclei and for all types of transitions near the Fermi boundary, the author derives expressions for the magnetic moments of nuclei in which exact account is taken for the interaction between the nucleons. The magnetic moments are corrected for spin-orbit interaction with a high degree of accuracy. In addi-

Card 1/5

MIGDAL, A. B.

"Development of the Phenomenological Theory of the Nucleus."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

MIGDAL, A.B.; LARKIN, A.I.

Phenomenological approach to the theory of the nucleus. Zhur. eksp. i teor. fiz. 45 no.4:1036-1050 O '63. (MIRA 16:11)

L 10193-63
ACCESSION NR: AP3000071

find the probabilities of electromagnetic transitions in nuclei. Orig. art. has: 63 formulas, of which 9 are in diagram form.

ASSOCIATION: none

SUBMITTED: 25Dec62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH NR REF SOV: 007 OTHER: 000

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Card 2/2

L 10193-63 EWT(1)/EDS--AFFTC/ASD--GG

ACCESSION NR: AP3000071 S/0056/63/044/005/1703/1718

52

AUTHOR: Larkin, A. I.; Migdal, A. B.

TITLE: Theory of a superfluid Fermi liquid. Application to the nucleus.

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1703-1718

TOPIC TAGS: Superfluid Fermi liquid, strong-interactions

ABSTRACT: A method is given for treating systems of strongly interacting particles, in which the observable quantities are expressed in terms of several constants that are introduced into the theory somewhat in the way that the masses and charges of particles are introduced in the theory of dispersion relations. The two-particle spectrum and the reaction of the system to an external field are determined by the two-particle Green's function, and it is shown that the finding of these quantities reduces to the solution of a simple equation analogous to the Schroedinger equation for two interacting particles in a potential well. The Landau theory of the Fermi liquid is extended to the case of superfluidity for systems of finite size. An equation is obtained which makes it possible to

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ACCESSION NR: AT4014034

Cooper pairing and the finite dimensions of the system. The latter is taken into account readily by the Green's function method. To describe the behavior of particles in an external field, a system of equations is formulated, the solution of which will yield the exact intensity of single-particle transitions and the magnetic moments of the nuclei. The coefficients of the solutions are determined by experiments. Further expansion of the theory to collective transitions is proposed. Orig. art. has: 22 formulas and 1 table.

ASSOCIATION: Fizicheskiy institut AN ArmSSR (Physics Institute, AN ArmSSR)

SUBMITTED: 00	DATE ACQ: 20Feb64	ENCL: 00
SUB CODE: PH	NO REF SOV: 004	OTHER: 002

Card 2/2

ACCESSION NR: AT4014034 S/2918/63/000/000/0363/0372

AUTHOR: Migdal, A. B.

TITLE: Phenomenological approach to nuclear theory

SOURCE: AN ArmSSR. Fizicheskiy institut. Voprosy* fiziki elementarny*kh chastits, 1963, 363-372

TOPIC TAGS: nuclear theory, quantitative nuclear theory, Fermi liquid theory, Cooper pair, Green's function, particle system in field, single particle transition, magnetic moment, collective transition

ABSTRACT: In an attempt to construct a quantitative nuclear theory, the author proposes to extend to the case of the nucleus the program used by Landau in the Fermi liquid theory (ZhETF v. 30, 1958, and v. 32, 59, 1957) for a system consisting of one type of particles, to include a system of two types of particles, with allowance for the

Card 1/2

The dependence of the energy density W of the system on the densities n_a and n_b of particles of the types a and b is given by

$$W = \frac{1}{2} K \frac{[(n_a + n_b) - 2n_0]^2}{2n_0} + \beta \frac{(n_a - n_b)^2}{2n_0}. \qquad (54).$$

n_0 is the equilibrium density at $n_a = n_b$ when external fields are absent. In the case of nuclei, the second member on the right side of Eq. (54) goes over into the term $\beta(N-Z)^2/A$ of the Weitzsäcker equation for the nuclear mass deficiency. The formulas

$$1 - (f^k_{aa} + f^k_{ab}) \equiv 1 - \chi^k_0 = (vp_0/n)_a n_0/3K,$$
$$1 - (f^k_{aa} - f^k_{ab}) \equiv 1 - \eta^k_0 = (vp_0/n)_a n_0/6\beta. \qquad (59)$$

interrelate the scattering amplitudes and the rigidity coefficients K and β. The approximation of pair collisions in nuclei proved to be unusable. There are 4 figures.

SUBMITTED: June 21, 1962
Card 4/4

$$f = f^{\omega} + \int f^{\omega} \frac{v\mathbf{k}\mathbf{n}_1}{\omega - v\mathbf{k}\mathbf{n}_1} f \frac{do_1}{4\pi},$$

$$g = g^{\omega} + \int g^{\omega} \frac{v\mathbf{k}\mathbf{n}_1}{\omega - v\mathbf{k}\mathbf{n}_1} g \frac{do_1}{4\pi}, \qquad (11')$$

$\vec{n}$ and $\vec{n}'$ are the unit vectors in the directions of $\vec{p}$ and $\vec{p}'$. The density of the free particles is $n = 2(4\pi/3)p_0^3/(2\pi)^3$, also for a system consisting of two types of particles. The effective mass is

$$m_a^* = 1 + \tfrac{1}{3}\{f_{aa}^{\omega} + f_{ab}^{\omega}\}_1 = 1 + \tfrac{1}{3}(\chi_1^{\omega})_a. \qquad (53).$$

The quantities $\chi = f_{aa} + f_{ab}$ and $\gamma = f_{aa} - f_{ab}$ satisfy equations of the type

$$\chi = \chi^{\omega} + \int \chi^{\omega} \frac{v\mathbf{k}\mathbf{n}_1}{\omega - v\mathbf{k}\mathbf{n}_1} \chi \frac{do_1}{4\pi},$$

$$\chi = \chi^{k} + \int \chi^{k} \frac{\omega}{\omega - v\mathbf{k}\mathbf{n}_1} \chi \frac{do_1}{4\pi}. \qquad (14).$$

Theory of a Fermi...

$$\Gamma(p, p'; q) = U(p, p'; q) - i\int U(p, p_1; q)\, G\left(p_1 + \frac{q}{2}\right) G\left(p_1 - \frac{q}{2}\right) \Gamma(p_1, p'; q)\, \frac{d^4 p_1}{(2\pi)^4}, \quad (1)$$

is then converted into the matrix equations

$$\Gamma_{aa} = \Gamma^{\omega}_{aa} + \Gamma^{\omega}_{aa} A_a \Gamma_{aa} + \Gamma^{\omega}_{ab} A_b \Gamma_{ba},$$
$$\Gamma_{ba} = \Gamma^{\omega}_{ba} + \Gamma^{\omega}_{ba} A_a \Gamma_{aa} + \Gamma^{\omega}_{bb} A_b \Gamma_{ba}, \quad (7')$$

for the amplitudes Γ_{aa}, Γ^{ω}_{aa} of the scattering of equal particles and amplitudes Γ_{ab}, Γ^{ω}_{ab} of the scattering of the particle a on the particle b. The equation

$$F(\mathbf{n}, \sigma; n', \sigma') = f(\mathbf{n}, \mathbf{n}') + g(\mathbf{n}, \mathbf{n}')\, \sigma\sigma' \quad (13)$$

relating the scattering amplitude as derived from (7') to the spin operators has an exchange character. Therefore,

S/056/62/043/005/048/058
B125/B104

AUTHOR: Migdal, A. B.

TITLE: Theory of a Fermi liquid consisting of two types of particles. Application to the nucleus

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 5(11), 1962, 1940 - 1952

TEXT: The theory of L. D. Landau (ZhETF, 30, 1058, 1956; ZhETF, 35, 97, 1958) for calculating the basic properties of a homogeneous system, consisting of one type of strongly interacting Fermi particles, from the amplitude of the forward scattering of quasiparticles on the Fermi surface is extended to a system of two different types of particles. This generalized theory makes it possible to calculate the basic properties of the nuclei. The results of Landau's theory apply also to two types of particles if the scattering amplitude Γ, the complex U of all diagrams having no parts linked by two horizontal lines, and the limits $\Gamma_{kv/\omega\to 0} \to f^{\omega}$ and $\Gamma_{kv/\omega\to 0} \to f^{k}$ of the scattering amplitudes are two-rowed matrices in isotopic-spin space. Landau's equation

Card 1/4

MIGDAL A. B.

S/089/62/013/006/019/027
B102/B186

AUTHORS: G. T. and M. R.

TITLE: Nauchnaya konferentsiya Moskovskogo inzhenerno-fizicheskogo instituta (Scientific Conference of the Moscow Engineering Physics Institute) 1962

PERIODICAL: Atomnaya energiya, v. 13, no. 6, 1962, 603 - 606

TEXT: The annual conference took place in May 1962 with more than 400 delegates participating. A review is given of these lectures that are assumed to be of interest for the readers of Atomnaya energiya. They are following: A. I. Leypunskiy, future of fast reactors; A. A. Vasil'yev, design of accelerators for superhigh energies; I. Ya. Pomeranchuk, analyticity, unitarity, and asymptotic behavior of strong interactions at high energies; A. B. Migdal, phenomenological theory for the many-body problem; Yu. D. Fiveyskiy, deceleration of medium-energy antiprotons in matter; Yu. M. Kogan, Ya. A. Iosilevskiy, theory of the Mössbauer effect; M. I. Ryazanov, theory of ionization losses in nonhomogeneous medium; Yu. B. Ivanov, A. A. Rukhadze, h-f conductivity of subcritical plasma;

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Single-particle ...

$$A_\lambda = (e'_\lambda + E'_\lambda)/(E_\lambda + E'_\lambda + \mu^+ - \mu^-),$$
$$B_\lambda = (E_\lambda - e_\lambda)/(E_\lambda + E'_\lambda + \mu^+ - \mu^-), \quad (43')$$
$$C_\lambda = -\Delta (E_\lambda - e_\lambda)/(E_\lambda + E'_\lambda + \mu^+ - \mu^-)(E'_\lambda - e'_\lambda).$$

$$\Delta = \gamma_1 \sum_\lambda C_\lambda,$$

$$1 = -\gamma_1 \sum_\lambda \{(E_\lambda - e_\lambda)/(E_\lambda + E'_\lambda + \mu^+ - \mu^-)(E'_\lambda - e'_\lambda)\} \quad (44);$$

$W_0(N)$ and $W_s(N)$ are ground-state and excited-state energies of the N-particle system, respectively. There are 9 figures and 8 Soviet-bloc references.

ASSOCIATION: Moskovskiy inzhenerno-fizicheskiy institut (Moscow Institute of Physics and Engineering)

SUBMITTED: September 4, 1960

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S/056/61/040/002/045/047
B102/B201

Single-particle ...

(39) $$E^{v}_{1\lambda} = W_{sv}(N+1) - W_0(N) > W_0(N+1) - W_0(N) \equiv \mu_1^+,$$
$$E^{v}_{2\lambda} = W_0(N) - W_{sv}(N-1) < W_0(N) - W_0(N-1) \equiv \mu_1^-,$$

(40) $$\pm\sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^+)^2} > \mu_1^+ - \mu^+, \qquad \pm\sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^-)^2} < \mu_1^- - \mu^-. \quad (40)$$

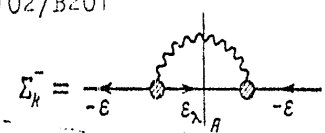
(41) $$E_{1\lambda} = \mu^+ + \sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^+)^2}, \qquad E_{2\lambda} = \mu^- - \sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^-)^2} \quad (41)$$

(42) $$\sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^+)^2} \equiv E_\lambda, \qquad \varepsilon_\lambda - \mu^+ \to \varepsilon_\lambda;$$
$$\sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^-)^2} \equiv E'_\lambda, \qquad \varepsilon_\lambda - \mu^- \to \varepsilon_\lambda.$$

Card 7/8

Single-particle ...

(11')



is obtained instead of (11). Numerous relations are derived; among others:

(36) $$(E^\nu_{1\lambda} - \varepsilon_\lambda) A^\nu_\lambda = -\Delta C^\nu_\lambda, \quad (E^\nu_{2\lambda} - \varepsilon_\lambda) B^\nu_\lambda = \Delta D^\nu_\lambda,$$
$$(E^\nu_{1\lambda} + \varepsilon_\lambda - 2\mu^+) C^\nu_\lambda = -\Delta A^\nu_\lambda, \quad (E^\nu_{2\lambda} + \varepsilon_\lambda - 2\mu^-) D^\nu_\lambda = \Delta B^0_\lambda,$$
$$\Delta = \gamma_1 \sum_{\lambda\nu} C^\nu_\lambda.$$

(37) $$E^0_{1\lambda} = \mu^+ \pm \sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^+)^2}, \quad E^\nu_{2\lambda} = \mu^- \pm \sqrt{\Delta^2 + (\varepsilon_\lambda - \mu^-)^2}. \quad (37)$$

$$G^+_\lambda(\tau) = -i \sum_s |(a^+_\lambda)_{s0}|^2 \exp\{-i[W_s(N+1) - W_0(N)]\tau\},$$
$$G^-_\lambda(\tau) = i \sum_s |(a_\lambda)_{s0}|^2 \exp\{i[W_s(N-1) - W_0(N)]\tau\}, \quad (38)$$

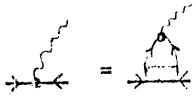
(38)

Card 6/8 где $(a^+_\lambda)_{s0} = (\Phi_s(N+1), a^+_\lambda \Phi_0(N))$ и $(a_\lambda)_{s0} = (\Phi_s(N-1), a_\lambda \Phi_0(N))$;

Single-particle ...

Δ are discussed in Chapter 6. The graph equation

$$\Delta^*(x, p, \varepsilon) = (2\pi)^{-4}\int \Gamma^*(x - x', \mathrm{p}, \varepsilon, \mathrm{p}', \varepsilon_0)\, F(x, p', \varepsilon')\, dx'\, d\mathrm{p}'\, d\varepsilon'.$$

$\Delta \equiv$  holds. By

one obtains

$$\Delta^*(x) = (2\pi)^{-4}\int \gamma^*(p')\, F(x, p', \varepsilon')\, d\mathrm{p}'\, d\varepsilon', \tag{20}$$

$$\gamma^*(p') = \frac{1}{4\pi}\int \Gamma^*(x - x', p_0, \varepsilon_0, \mathrm{p}', \varepsilon_0)\, dx'\, d\omega_{p'},$$

for $p = p_0$ and $\varepsilon = \varepsilon_0$, if $\Delta^*(x) \equiv \Delta^*(x, p_0, \varepsilon_0)$. The connection between the equations for the Green function and the vertex part is examined by the method of the two Green functions in Chapter 7. The second Green function is defined by the method by L. P. Gor'kov.

$$(i\partial/\partial\tau - H)\,\tilde{G}(x, x') = \delta(x - x') + i\tilde{\Delta}(x)\, F(x, x'),$$

$$(i\partial/\partial\tau + H^* - 2\mu)\,\tilde{F}(x, x') = -i\tilde{\Delta}^*(x)\,\tilde{G}(x, x'), \tag{28}$$

$$\tilde{\Delta}^*(x) = \int \tilde{\gamma}^*(p')\,\tilde{F}(x, p', \varepsilon')\, d\mathrm{p}'\, d\varepsilon'/(2\pi)^4.$$

is obtained. The application of the system of equations to the nucleus is discussed in Chapter 8. For $\tau < 0$,

Single-particle ...

are obtained; if the renormalized Green function $\tilde{G}(G = (1 - \partial\tilde{\Sigma}_p/\partial\varepsilon_o)$ is developed according to the eigenvalues φ_λ, $\tilde{G}(\vec{r}, \vec{r}', \varepsilon)$

$$= \sum_{\lambda\lambda'} G_{\lambda\lambda'}(\varepsilon)\,\varphi_\lambda(\vec{r})\varphi^*_{\lambda'}(\vec{r}'), \qquad (10)$$

is obtained, and, without pairing, $G^o_{\lambda\lambda'} = \delta_{\lambda\lambda'}/(\varepsilon - \varepsilon_\lambda + i\alpha\,|\varepsilon - \varepsilon_{\lambda_o}|(\varepsilon - \varepsilon_{\lambda_o}))$, where ε_{λ_o} is the highest filled level. The proper-energy part Σ_k which is connected with pair correlation is studied in Chapter 5.

$\Sigma_k =$  . For a square-well potential U(r):

$(\Sigma_k)_{\lambda\lambda'} = \delta_{\lambda\lambda'}\,|\Delta_\lambda|^2/(\varepsilon_\lambda + \xi_\lambda - 2\mu)$, while in all other cases

$((\Sigma_k)_{\lambda\lambda'} = \sum_{\lambda'} \Delta_{\lambda\lambda'}\,\Delta_{\lambda'\lambda_1}/(\varepsilon + \varepsilon_{\lambda'} - 2\mu))$. The equations for the vertex part

Card 4/8

Single-particle ...

$$\sum = \quad + \qquad (2).$$

The analytical properties of the proper-energy parts examined in Chapter 3. Relation (5)

$$\Sigma = \Sigma_0(r, r_1, \varepsilon) + \alpha(r, r_1)|\varepsilon - \varepsilon_0|(\varepsilon - \varepsilon_0)\, i + 2\pi^{-1}\beta(r, r_1)|\varepsilon - \varepsilon_0|^3 \ln[i\varepsilon_0/(\varepsilon - \varepsilon_0)],$$

is thus obtained, where Σ_0 is a function of ε which has no singularity at $\varepsilon \to \varepsilon_0$ (Σ_0 has a singularity at the distance ε_0 from the real axis). Chapter 4 deals with the approximation of independent quasiparticles.

$$\int \Sigma_R(r, |r - r_1|, \varepsilon)\, G(r_1, r', \varepsilon)\, dr_1 = (2\pi)^{-3}\int \Sigma_R(r, p, \varepsilon)\, G(p, r', \varepsilon)\, e^{ipr}\, dp \approx$$

(6) and

$$\approx \{\Sigma_R(r, p_0, \varepsilon_0) + (\partial\Sigma_R(r, p_0, \varepsilon_0)/\partial\varepsilon_0)(\varepsilon - \varepsilon_0) + (M/p_0)(\partial\Sigma_R(r, p_0, \varepsilon_0)/\partial\varepsilon_0)(p^2/2M - p_0^2/2M)\}\, G(r, r', \varepsilon), \qquad (6$$

$$\{\varepsilon - p^2/2M_{eff} - U(r)\}[1 - (\partial\Sigma_R(p_0, \varepsilon_0)/\partial\varepsilon_0)]\, \tilde{G}(r, r', \varepsilon) = \delta(r - r') + \int dr_1\, \Sigma_k(r, r_1, \varepsilon)\, \tilde{G}(r, r', \varepsilon);$$

(7)

$$M_{eff} = M\,\frac{1 - \partial\Sigma_R/\partial\varepsilon_0}{1 + (\partial\Sigma_R/\partial p_0)(M/p_0)},$$

Card 3/8

$$U(r) = \frac{\Sigma_R(r, p_0, \varepsilon_0) - \varepsilon_0\partial\Sigma_R/\partial\varepsilon_0 - (p_0 2)(\partial\Sigma_R/\partial p_0)}{1 - \partial\Sigma_R/\partial\varepsilon_0}.$$

S/056/61/040/002/015/047
B102/B201

Single-particle ...

to consist of N particles of one kind; it is found, however, that two independent systems of equations are obtained for a system of two kinds of Fermi particles (e.g., neutrons and protons in the nucleus); only the graphs as a whole become somewhat complicated. The application of results to real nuclei is discussed by the example of the twofold magic nucleus (without pair correlation) Pb^{208}. If the model of the free particles were correct, it would have to be possible to obtain the excited state of Pb^{208} with 2.6 Mev and the spin 3, which is regarded as consisting of quasiparticles and holes, from the ground states of Pb^{209} and Pb^{207}. In the actual fact, however, 3.5 Mev and a spin $\neq 3$ result instead of 2.6 Mev. The difficulties involved are designated as "three-spin problem"; its solution requires the introduction of an excitation interaction. The paper consists of eight chapters. Chapter 1 (introduction) offers an exposition of the problems, the phenomenological bases of the method and a discussion of the accuracy. Chapter 2 contains the Dyson equation in coordinate representation for the single-particle Green function and a brief discussion of the respective graph equation for the compact part of the proper energy

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S/056/61/040/002/045/047
B102/B201

AUTHOR: Migdal, A. B.

TITLE: Single-particle excitation and superfluidity in systems of Fermi particles with arbitrary interaction. Application to the nucleus

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 684-697

TEXT: The author wanted to prove that a study of the analytical properties of Green functions when taking account of pair correlations and with any interaction of the particles of the system yields equations describing the single-particle excitation, if the excitation energy is small compared with the chemical potential of the system; these equations accurately describe the excited states of a system consisting of a finite number (N) of particles including terms of the order of $N^{-1/3}$. One must know the spectrum of single-particle excitations without pair correlation in order to be able to determine the energy of the ground state and of the first excited single-particle states from the system of equations. To begin with, the system is assumed

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a method of calculating the moment of inertia, calculation of the moment of inertia for the oscillator potential, calculation of the moment of inertia for a rectangular potential well, moments of inertia corresponding to neutrons and protons, gyromagnetic ratio, moments of inertia of odd nuclei, moments of inertia in excited states, comparison with the experiment. Besides, the transition to an odd proton reduces the moment of inertia much less than the transition to an odd neutron. The author thanks L. D. Landau, D. F. Zaretskiy and A. I. Larkin for interesting discussions as well as I. M. Pavlichenkov and M. G. Urin for the compilation of the tables. There are 1 figure, 3 tables, and 7 references, 3 of which are Soviet.

SUBMITTED: February 13, 1959

21 (1).

AUTHOR: Migdal, A. B.

SOV/56-37-1-38/64

TITLE: Superfluidity and Moments of Inertia of Nuclei (Sverkhtekuchest' i momenty inertsii yader)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1(7), pp 249 - 263 (USSR)

ABSTRACT: The author discusses a method of investigating the superfluidity in systems of finite dimensions. The moments of inertia are calculated by this method in quasi-classical approximation which leads to a satisfactory agreement with the observed values of the moments of inertia. Also the calculated increase of the moment of inertia in the transition from an even-even to an even-odd nucleus, and also the gyromagnetic ratio for rotating nuclei, agree with the experiment. Thus, these results confirm the hypothesis of superfluidity of nuclear matter. Besides, the superfluidity of nuclear matter may lead to interesting macroscopic phenomena if there are stars with a core of neutrons. Such a star would be in the state of superfluidity, and the transition temperature would correspond to the value of 1 Mev. The paper is divided as follows: Introduction, a method of investigating a system of finite dimensions,

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MIGDAL, A.B.

21 (0), 24 (0)

AUTHOR: Tyagunov, G. A. SOV/89-7-2-18/24

TITLE: Scientific Conference of the MIFI (Nauchnaya konferentsiya MIFI)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 2, pp 176-177 (USSR)

ABSTRACT: The yearly scientific meeting was held from 17 April to 15 May 1959 in the Moskovskiy inzhenerno-fizicheskiy institut (Moscow Physical Engineering Institute). More than 600 participants from 100 different institutes attended the 2 plenary and 18 sectional conferences. A total of 148 lectures were held. The following lectures are specially mentioned: M. K. Romanovskiy on the thermo-nuclear examinations, N. G. Basov on the physical foundations of molecular generators and amplifiers, A. I. Leypunskiy on the construction of a fast reactor, I. Ya. Pomeranchuk on the theory of the peripheral collision of mesons and nucleons, A. B. Migdal on superfluidity and momentum of inertia of the nuclei, A. S. Kompaneyets on the strong electromagnetic gravity wave, V. I. Gol'danskiy on levels which are excited within the nucleus shell and methods of comprehending them. L. L. Rozental' and L. A. Prokhorova on the analysis of the possible experiments for the determination of the measurements of the μ-mesons, V. I. Dianov-Klokov on the spectrum of liquid and crystalline hydrogen under pressure (5000-10000 atm) and an instrument for measuring the absorption curves, Y. M. Lyagidevskiy and O. V. Dimandina on new application possibilities of the diffusion chamber, A. V. Shal'nov on calculation methods for linear electron accelerators with migratory waves, M. A. Ryazin, A. D. Minervin and A. I. Zabzyev on new theories of the electron capture under betatron conditions of the acceleration, Ya. I. Pratnov on optimum wave length for a generator, S. P. Lomnev and G. A. Tyagunov on magnetic focusing in a linear electron accelerator, O. A. Val'dner, P. A. Dmitrovskiy, D. [illegible] Zorin. Yu. K. Klein on the 3 mev linear accelerators of the MIFI, and V. V. Kuznetskiy, O. A. Val'dner, V. V. Kotov and V. N. Chesnokov on examination of the electron movement in the system of the elutron with consideration of the scattering fields, O. A. Krayev on impulse method for measuring the heat conduction capacity of liquids and the theory of this method, [illegible] Khachaturashev, Yu. [illegible] Il'in and D. A. Chirov on heat transmission to the eutectic Na-K which flows in a circular space, V. I. Petrovichev on heat transmission to circulating mercury. V. I. Royzin on special conditions when working with a flat triode in

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the impulse technique, O. S. Pofurayev on calculation methods and construction of an impulse transformer for instruments with semi-conductor elements, Ya. A. Khetagurov on a possibility judge the characteristics of magnetic recording of impulses, B. I. Kal'nin on the element system for a universal digital computer, V. S. Malov on multiple control of the parameters of technologic processes. P. I. Popov on analysis of several systems with which physical energy apparatus can be automatically started, Yu. I. Topchayev on a method to examine the quality of a reactor control when the reactivity changes stepwise or linearly. G. A. Leont'yev and A. I. Yevstyukhin on examination of the iodine method of refining niobium and characteristics of the metal obtained, P. L. Gruzin and G. G. Ryabova on examination of the micro-distribution of carbon, tungsten, iron and other elements in zirconium and its alloys by use of autoradiography, G. B. Fedorov on determination of the sublimation heat of zirconium and nickel by using radioactive indicators and G. B. Fedorov and A. M. Semenikhin on determination of the diffusion coefficients of chromium, nickel, iron and chromium nickel steels. The literature for all these lectures will be published by the MIFI in a symposium.

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quasiparticle lies sufficiently near to the Fermi surface the damping results from the interaction between the electrons. This interaction is caused by the exchange of phonons. The interaction between the electrons implies a damping that is proportional to the square of the "nearness" to the Fermi surface. The energy spectrum of the electrons is determined by the poles of the Green (Grin) function. There are 2 figures and 3 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy inzhenerno-fizicheskiy institut (Moscow Engineering-Physics Institute)

SUBMITTED: July 12, 1957(initially) and March 20, 1958 (after revision)

λ_0 is small. M denotes the mass of the ion and λ_0 a dimensionless parameter which does not contain the masses of the ions. The author first introduces the propagation functions G and D of the electron and phonon : $G = i\langle T\psi(;)\psi^{+}(2)\rangle$, $D = i\langle T\varphi(1)\varphi(2)\rangle$. The average is determined with respect to the ground state of the system. The Dyson (Dayson) equations connect D and G with the vertex part Γ. Then a formula for the interaction energy is given. The next part of this paper deals with the vertex part. It is different from $\Gamma_p = 1$ by a quantity with the order of magnitude $M^{-1/2}$. The author discusses the first order correction of Γ according to the disturbation theory. The calculations are discussed step by step. Finally one obtains an expression of the type $\Gamma = 1 + O(M^{-1/2})$. This result is not changed by taking into account the graphs of the higher orders. The following parts of this paper deal with the Green (Grin) functions of the phonon and of the electron. The damping of the electron excitations results from the emission of phonons. If the energy of the

SOV/56-34-6-10/51

AUTHOR: Migdal, A. B.

TITLE: The Interaction Between Electrons and Lattice Vibrations in a Normal Metal (Vzaimodeystviya elektronov s kolebaniyami reshetki v normal'nom metalle)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 34, Nr 6, pp 1438 - 1446 (USSR)

ABSTRACT: With the method developed in this paper one may - in the case of a normal metal - take into account the interaction of the electrons with the lattice vibrations. In this method it is not necessary to assume that the interaction is weak. In the case of superconduction the necessary condition for the applicability of the usual methods of field theory is not valid. Therefore the extension of the method (developed in this paper for normal metals) as regards the case of superconductivity requests a separate investigation. The energy spectrum of the Hamiltonian given by H.Fröhlich (Ref 2) cannot be obtained with the methods of disturbation theory. With the methods of field theory the energy spectrum can be found as a series with respect to the powers of $M^{-1/2}$ without assuming that

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MIGDAL, A. B.

21 (7), 21 (8)

SOV/89-7-1-18/26

AUTHOR: Rudakov, V. P.

TITLE: IX All-Union Conference on Nuclear Spectroscopy (IX Vsesoyuznoye soveshchaniye po yadernoy spektroskopii)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 1, pp 76-78 (USSR)

ABSTRACT: The IX All-Union Conference was held from January 26 to February 2, 1959 at Khar'kov. More than 300 participants heard 100 lectures, the most important of which dealt with the following fields. Nuclear Theory. General problems of β-decay. A. S. Davydov (MGU): Theoretical classification of low-energy excited nuclear states. L. K. Peker: Deformed nuclei. B. L. Birbrair, L. K. Peker, L. A. Sliv (LFTI): Quadrupole oscillations of deformed nuclei. Ye. V. Inopin, V. Yu. Gonchar, S. P. Tsytko (KhFTI): Calculation of the ft-values with matrix elements for β-transitions by means of the generalized nuclear model. S. T. Belyayev (IAE): Consideration of pair-correlation in nuclei. A. B. Migdal (IAE): The application of the superconductivity model to nuclei for the purpose of calculating their moments of inertia. P. E. Nemirovskiy (IAE). Problem of the neutron stability of nuclei. [illegible] (IAE): The present stage in the theory of β-decay. [illegible]

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V. K. Grigor'yev, [illegible] (IAE): Measurement of the angular correlation between electron and neutrino in the decay of the neutron. [illegible] Nazarenko, [illegible] (LFTI): Measurement of the correlation between the transversal electron polarization and circular polarization of γ-quanta occurring in the decay of Sc^{46} and Co^{60}. Decay Schemes. γ-radiation of Nuclei. [illegible] Amfiriyev, A. K. Val'ter, Yu. V. Gonchar, Ye. [illegible], A. N. L'vov, P. M. Tutakin, S. P. Tsytko, [illegible], [illegible], I. Ya. Malakhov, [illegible] (Fiziko-tekhnicheskiy Khar'kovskiy institut (Physico-technical Institute, Khar'kov)): The $Si^{28,29,30}(p,\gamma)$, $Ne^{20}(p,\gamma)$, $S^{32,34}(p,\gamma)$, $Ar^{40}(p,\gamma)$ and $N^{14}(p,\gamma)$ reactions. D. G. Alkhazov, A. P. Grinberg, G. M. [illegible], M. Kh. Lemberg, V. V. Rozhdestvenskiy, [illegible] (Leningradskiy fiziko-tekhnicheskiy institut (Leningrad Physico-technical Institute): Investigation of the Coulomb excitation of the lower levels of some nuclei during their bombardment by multiply charged ions (C, N, O and Ne). [illegible] Murin, [illegible] Pokrovskiy, [illegible] (FIAN). New isotopes Tu^{161}, Ho^{153}, Ho^{155} and Er^{157}. B. S. Dzhelepov, [illegible] Sergiyenko (LGU): Decay schemes of some neutron-deficient isotopes, set up on the basis of measurements of the coincidence of the internal conversion electrons. Spectrometer Engineering. B. S. Dzhelepov, [illegible], V. G. Chumin (RIAN): α-spectrometer with double focusing. S. A. Baranov, [illegible], [illegible] G. Zelenkov, A. F. [illegible], G. Ya. Shchepkin (IAE): Improved α-spectrometer. [illegible] Barchuk, [illegible] V. Belyak, V. I. [illegible], [illegible] (AN UkrSSR): Magnetic spectrograph for heavy charged particles. The representatives of the Ministerstvo radiotekhnicheskoy promyshlennosti (Ministry of the Radio-engineering Industry) gave a report about new multipliers. The Conference was closed by B. S. Dzhelepov who stressed the fact that nuclear tables and reference works ought to be published much more quickly in order to be of real use to the experimenter.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800004-6

An Application of Quantum Field Theory Methods to the Many- -Body Problem. 56-1-22/55

arbitrary weak electromagnetic field are investigated. There are 3 figures and 8 references, 5 of which are Slavic.

ASSOCIATION: Moscow Engineering and Physical Institute (Moskovskiy inzhenerno-fizicheskiy institut).

SUBMITTED: July 12, 1957 (initially) and October 24, 1957 (after revision).

AVAILABLE: Library of Congress

Card 3/3

An Application of Quantum Field Theory Methods to the Many- -Body Problem. 56-1-22/56

The kernel of the phonon determines the energy and the damping of the excitations of the lattice. At first the kernel $G(p\varepsilon)$ is written down for one particle, and then the author passes over to a Fourier representation. Subsequently, the properties of the kernel in the complex plane are investigated, and the interrelation of the kernel of one particle with the spectrum of the excitations is determined. The behaviour of the kernel at great positive times is also studied. The energy and the damping of the excitations are determined in the lower half plane by means of the real and imaginary part of the poles of the analytical propagation of $G(p\varepsilon)$. The kernel for one particle also permits the determination of other charachteristics of the system, e.g. the distribution of the particles on the different momenta. For the purpose of studying the energy spectrum and the behaviour of the system in weak external fields, it is necessary to investigate the kernel for two particles. This kernel for two particles is written down here explicitly, it is suited, for example, for studying the excited states of a system of N particles containing one particle and one hole. The case of forces of short range and the behaviour of a system in an

Card 2/3

MIGDAL A B

AUTHORS: Galitskiy, V. M., Migdal, A. B. 56-1-22/56

TITLE: An Application of Quantum Field Theory Methods to the Many--Body Problem (Primeneniye metodov kvantovoy teorii polya k zadache mnogikh tel).

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 1, pp. 139-150 (USSR).

ABSTRACT: In the present paper shows, that the energy and the damping of the quasi-particles depends on the poles of the dissipation function of a particle. The author here investigates a homogeneous unbounded system, wherein the momentum operator commutes with the Hamiltonian. In all Fermi-systems there obviously exist excitations analoguous to those in an ideal Fermi gas. It is convenient to study the properties of the excitations by means of the methods of the quantum theory of fields, by introducing the kernels of the system into the investigations. Apart from the kernels of the particles it is also possible to introduce the functions of the dissipation of the interaction between the particles, e.g. the kernel of the phonon represents this dissipation function in the problem of electrons in a metal being in interaction with the lattice.

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AVAILABLE: Library of Congress (QC794.A38)

IS/ksv
3-6-59

Card 5/5

TABLE OF CONTENTS:

MIGDAL, A B

P1(7) PHASE I BOOK EXPLOITATION SOV/1242

Akademiya nauk SSSR. Institut atomnoy energii

Fizika plazmy i problema upravlyayemkh termoyadernykh reaktsiy, t. II. (Plasma Physics and the Problem of Controlled Thermonuclear Reactions, t. 2) [Moscow] Izd-vo AN SSSR, 1958. 355 p. 3,000 copies printed.

Resp. Ed.: Leontovich, M.A., Academician.

PURPOSE: This collection contains previously unpublished work of members of the Institut atomnoy energii (Institute of Atomic Energy) of the Academy of Sciences of the USSR. It is intended for scientists interested in this field.

COVERAGE: This book is the second of four volumes of previously unpublished work of members of the Institute of Atomic Energy during the period 1951-58. The exploitation cards on the other volumes in this series have been released under the numbers 1241,1243, and 1244.

Card 1/5

KOGAN, V. I. and MIGDAL, A. B.

"The Electron Temperature Dependence of the Spectrum of the Bremsstrahlung of a Plasma." (Work - 1951); (and reworked in Preparation for publication); pp. 172-177.

"The Physics of Plasmas; Problems of Controlled Thermonuclear Reactions;" Vol. I. 1958, published by Inst. Atomic Energy, Acad. Sci. USSR.
resp. ed. M. A. Leontovich, editorial work V. I. Kogan.

Available in Library.

GALITSKIY, V. M. and MIGDAL, A. B.

"Dielectric Constant of a High Temperature Magnetized Plasma and the Evaluation of the the Radiant Heat Conductivity." (Work - 1951); pp. 161-171.

"The Physics of Plasmas; Problems of Controlled Thermonuclear Reactions." Vol. 1. 1958, published by Inst. Atomic Energy, Acad. Sci. USSR.
resp. ed. M. A. Leontovich, editorial work V. I. Kogan.

Available in Library.

56-4-1/52

AUTHOR MIGDAL, A.B.

TITLE The Bremsstrahlung and Forming of Pairs at High Energies in a Condensed Medium.
(Tormoznoye izlucheniye i obrazovaniye par v kondensirovannoy srede - Russian)

PERIODICAL Zhurnal Eksperim,i Teoret.Fiziki,1957,Vol 32,Nr 4, pp 633-646 (U.S.S.R.)
Reviewed 8/1957
Received 7/1957

ABSTRACT The present paper investigates the influence exercised by multiple scattering upon bremsstrahlung and forming of pairs.Formulae are given for the probability of bremsstrahlung and formation of pairs on the unit of the way in a condensed medium without restriction of the energies of electrons and quanta.For this purpose a connection between the transition probability and the matrix of density is set up.The probability of bremsstrahlung or formation of pairs must be averaged over all possible locations of the atoms of the scattering medium.Averaging of the number of transitions in the time unit is reduced to the search for the averaged matrix of density and to the determination of two formulae given here.Next, the author derives an equation for the averaged matrix of density, computation is followed step by step. Summation over the spin of the electron and polarization of the quantum in the formulae derived here can be carried out in the usual manner. In one of the formulae summation can be reduced to the determination of the trace of double-rowed matrizes. A formula is now given for the probability of bremsstrahlung,i.e.for the radiation of a quantum with an energy between k and k + dk per unit of way.An expression for the angular distribution of the quanta is also given.This angular distribution

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On the Distribution of FERMI Particles Which are in Interaction over the Momenta. PA - 2709

se of GREEN'S function of a particle:

$$G(\vec{r}_1,t_1;\vec{r}_2,t_2)=i\langle Te^{iHt_1}\psi(\vec{r}_1)e^{-iH(t_1-t_2)}\psi^+(\vec{r}_2)e^{iHt_2}\rangle$$

This GREEN'S function is then developed into a FOURIER series and brought into connection with the momentum distribution of the particles in the ground state. The following expression is obtained for this distribution:

$n(p) = i\int_C G(p,\varepsilon)d\varepsilon/2\pi$. GREEN'S function must have poles which correspon to the quasiparticles. If p is near p_0, $G(p,\varepsilon) = Z/(\varepsilon_p - \varepsilon - i\gamma(p)) +$ + $f(p,\varepsilon)$ applies. Here the function $f(p,\varepsilon)$ describes the damping of the quasiparticles and changes its sign at $p = p_0$. Z here denotes the renormalization constant of GREEN'S function.

ASSOCIATION
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PA - 2709

AUTHOR MIGDAL A.B.

TITLE On the Distribution of FERMI Particles Which Are in Interaction over the Momenta.
(O raspredelenii vzaimodeystvuyushchikh Fermi-chastits po impulsam, Russian)

PERIODICAL Zhurnal Eksperim.i Teoret.Fiziki, 1957,Vol 32,Nr 2,pp 399-400 (U.S.S.R.)
Received 5/1957 Reviewed 6/1957

ABSTRACT The system investigated here consists of a great number of particles which are in interaction. The excited states of the system should contain states the energy of which may be represented as a sum o f the energies of the quasiparticles. A formula is given for the energy of the quasiparticles. The quasiparticles have a damping that is proportional to $(p - p_0)^2$.(Here p denotes the momentum of the quaiparticles, p_0 - the maximum momentum of the FERMI-filling for the quaiparticles, $v_0 = v(p_0)$ - the velocity of the quaiparticles on the FERMI surface. $p > p_0$ corresponds to a quasiparticle and $p < p_0$ to a hole). In the case of sufficiently strong interaction, an excited state of the system for p which are near p_0, cannot therefore be described by means of quaiparticles. At $p \to p_0$ the quasiparticles are able to describe the state of the system also in the case of strong interaction. The author here shows that the distribution of the particles over the momenta at the basic state hasajumb at $p = p_0$, and this applies to any interaction. Here, it must be born in mind that the distribution of the particles (and not of the quasiparticles) over the momenta is concerned. The following equation applies in the ca-

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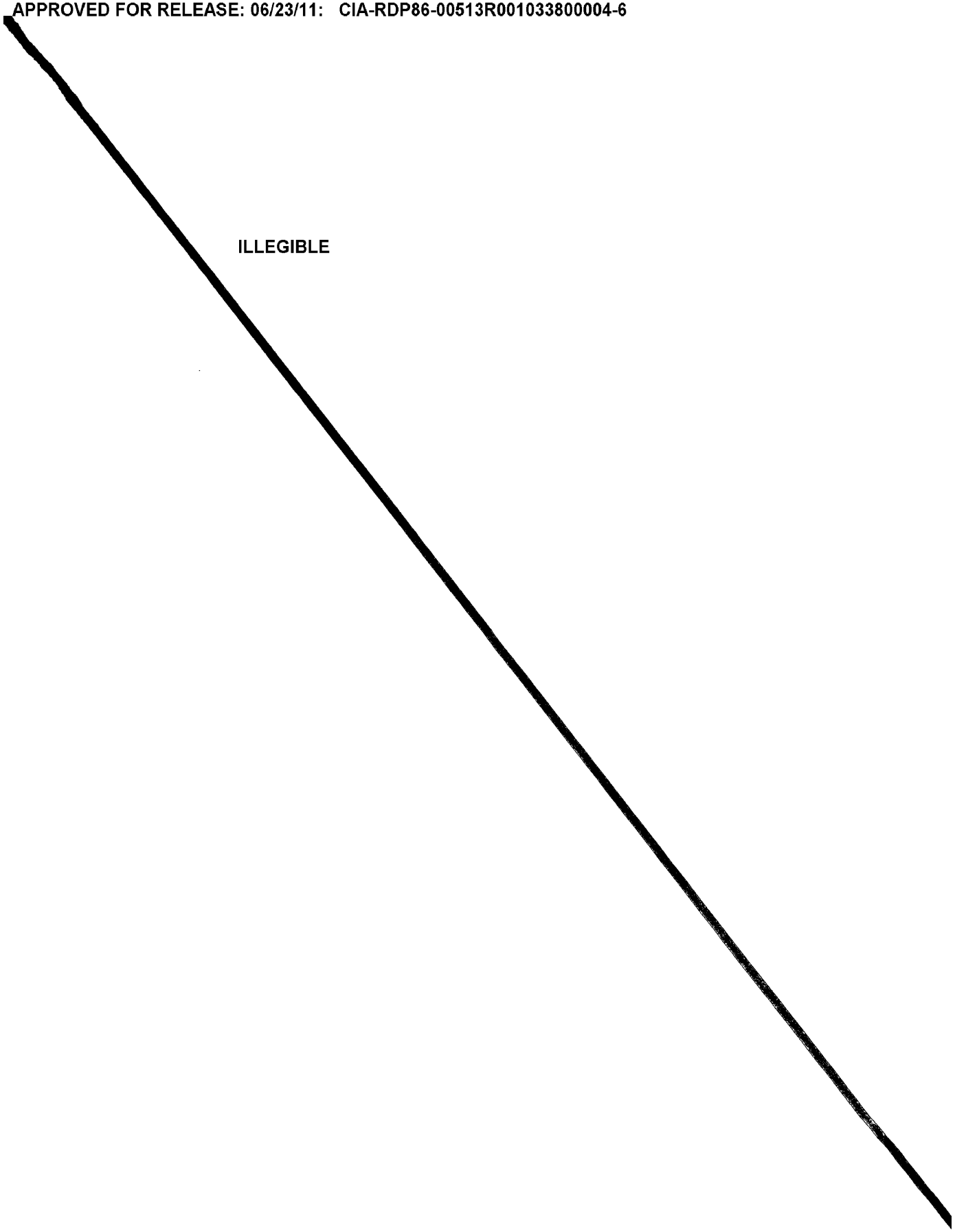
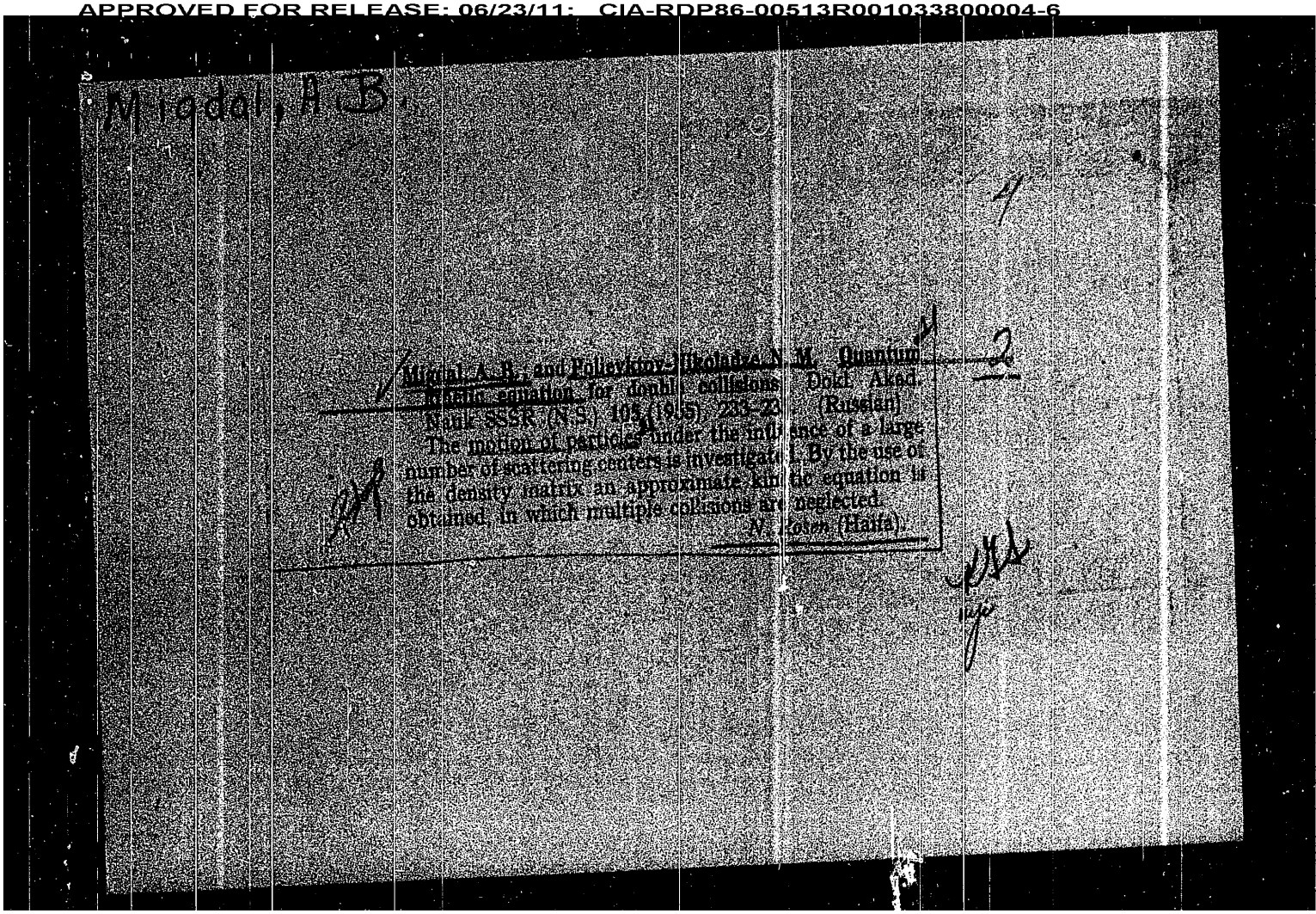


MIGDAL, A. B., GALITSKIY, V. M. and LANDAU, L. D.

"The Disintegration of the Deuteron by the Coulomb Field of the Nucleus" a paper Presented at the International Conference on Nuclear Reactions, Amsterdam, 2-7 July 1956.

D551274



Migdal, A. B.; and Polievkov, [illegible] Kholadze, N. M. Quantum [illegible]
Kinetic equation for double collisions Dokl. Akad. [illegible]
Nauk SSSR (N.S.) 105 (1955), 233–23 (Russian)

The motion of particles under the influence of a large number of scattering centers is investigated. By the use of the density matrix an approximate kinetic equation is obtained, in which multiple collisions are neglected.

N. Rosen (Haifa).

MIGDAL A.

3000

V/2189

QUANTUM KENETIC EQUATION FOR MULTIPLE SCATTERING. A. Migdal. Doklady Akad. Nauk S.S.S.R. 105, 77-9(1955) Nov. 1. (In Russian) PH

The integral equation for the electron density matrix, averaged on the distribution of the scattering atoms was calculated. This integral equation is the quantum analogy of the classical kinetic equation. With higher energy electrons, the integral equation is reduced to a differential form. (R.V.J.)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800004-6

MIGDAL, A. B.

"Theory of Scattering in a Quasi-Classical Approximation," Zh. eksper. i teor. fiz.
" 26, 4, 396-400, 1955.

The wave-function is represented as $\psi = \psi_0 \cdot \chi$ where ψ_0 is the semi-classical approximate (W.K.B.-like) function $\frac{1}{\sqrt{p}} e^{\frac{i}{\hbar}\int p\,dx}$. The equation on χ is then $\chi'' + \frac{2}{\hbar} p \chi' + \frac{1}{\hbar} p' \chi = 0$. Approximate solutions are found for using a semi-classical Green function.

FD-1882

MIGDAL, A. B.
USSR/Nuclear Physics - Meson Formation

Card 1/1 Pub. 146-2/21

Author : Migdal, A. B.

Title : Meson formation at an energy close to the threshold

Periodical : Zhur. eksp. i teor. fiz. 28, 10-12, 1955

Abstract : The energy spectrum of mesons originating in collisions of two nucleons is determined. The highest probability is attributed to formation of nucleons of weak mutual energy. Therefore the most probable meson energy should approach the maximum meson energy, in accordance with the conservation law. The correlation between the cross section of deuteron formation in reactions $p + p = n + p + \pi^+$; $n + p = p + n + \pi^0$; $n + n = n + p + \pi^-$ and cross sections of formation of free neutrons and protons with parallel spins is obtained. Three USSR and two US references.

Institution:

Submitted : February 23, 1954

MIGDAL, A. B.

USSR/Nuclear Physics - Reactions

FD-1881

Card 1/1 Pub. 146-1/21

Author : Migdal, A. B.

Title : Theory of nuclear reactions producing slow particles

Periodical : Zhur. eksp. i teor. fiz. 28, 3-9, 1955

Abstract : The energy and angular distribution of slow nucleons produced as result of nuclear reactions are analyzed. The probability of nucleon formation in a bound state is estimated. Author thanks B. T. Geylikman, I. Ya. Pomeranchuk and Ya. A. Smorodinskiy for discussions. One USSR and two US references.

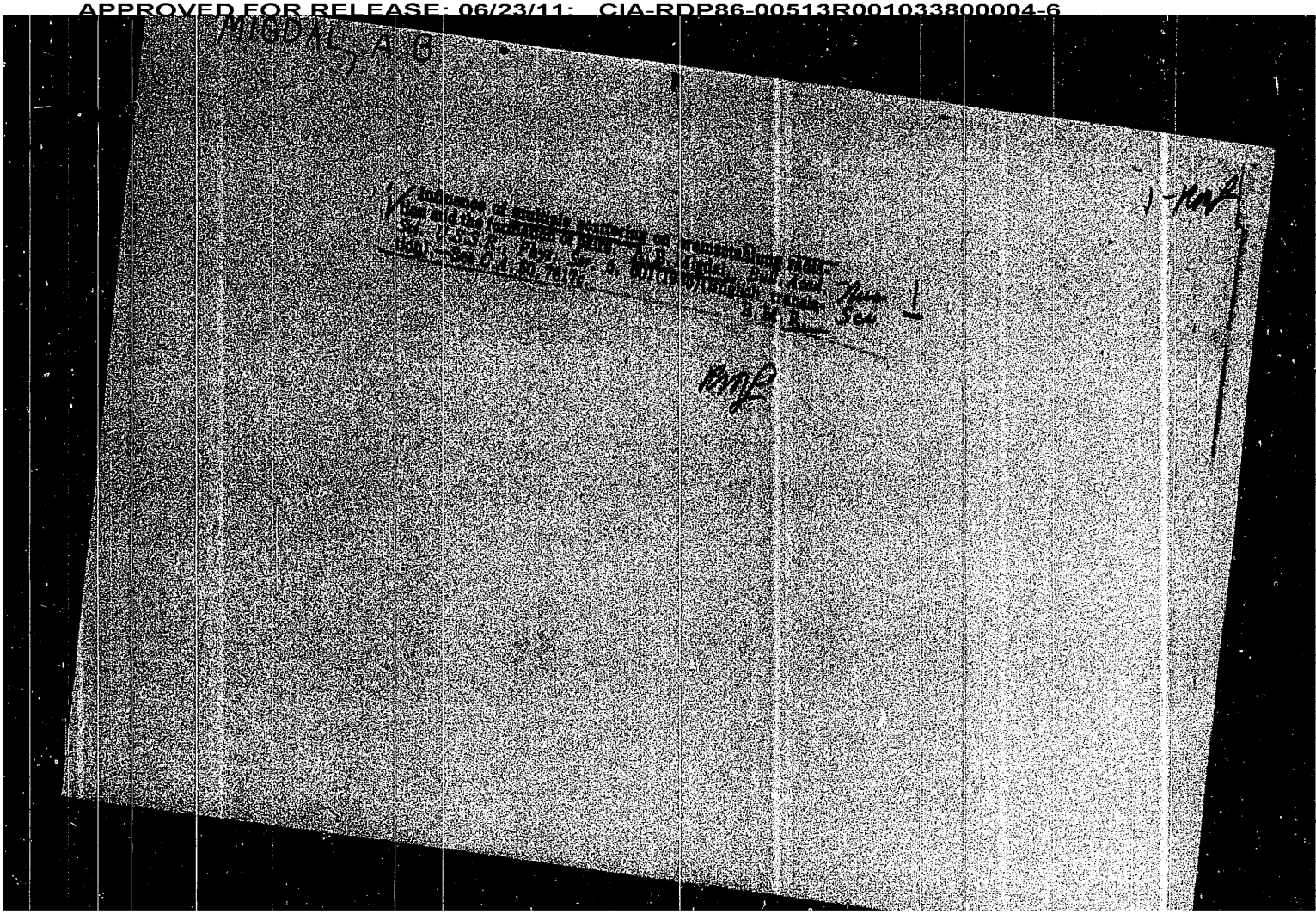
Institution:

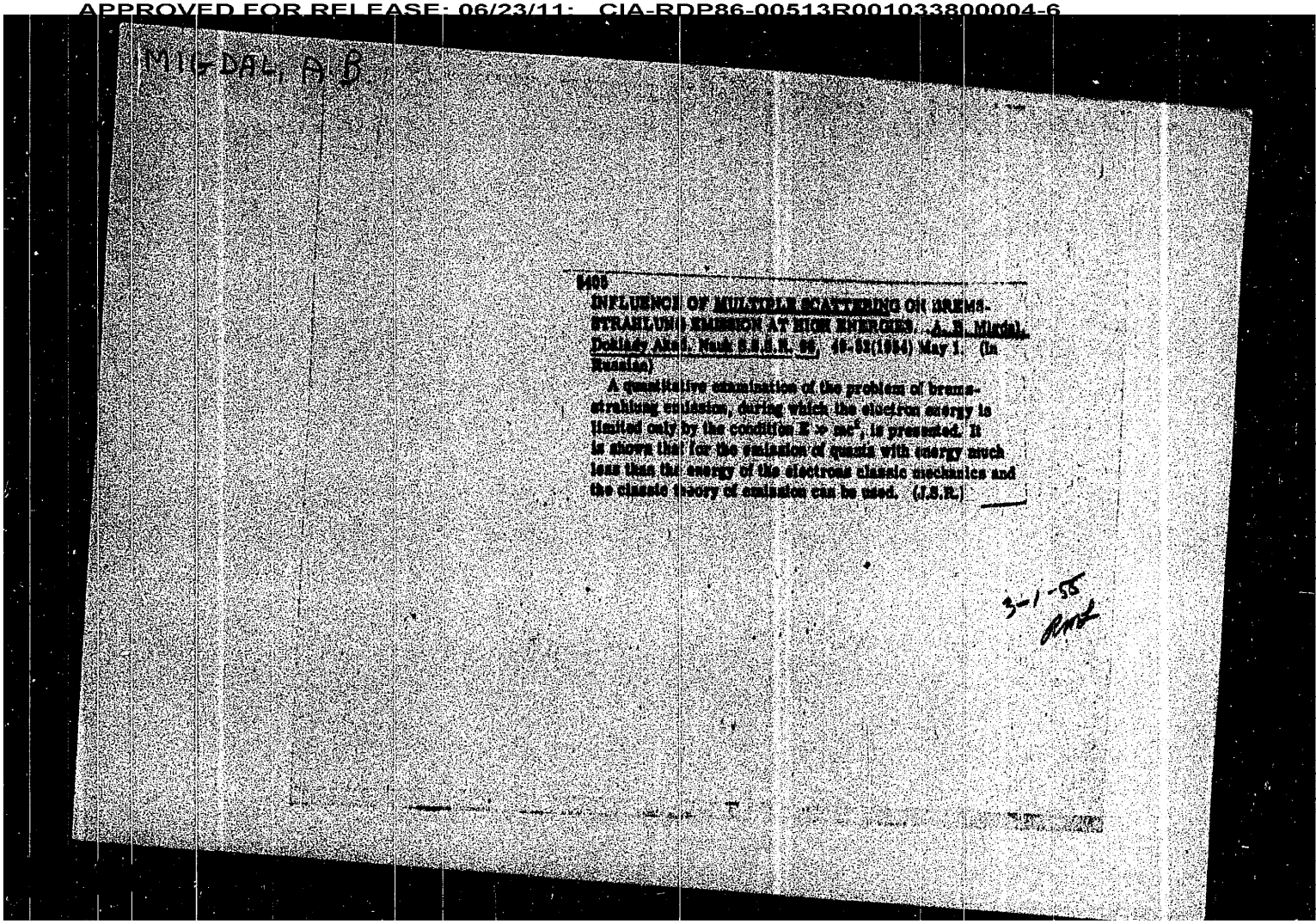
Submitted : February 23, 1953

MIGDAL, A.B.

Effect of multiple scattering on bremsstrahlung and on pair formation. Izv.AN SSSR.Ser.fiz.19 no.6:665 N-D '55.(MLRA 9:4)

1.Akademiya nauk SSSR.
(Cosmic rays) (Nuclear physics)





MIGDAL, A.B.

6405
INFLUENCE OF MULTIPLE SCATTERING ON BREMS-STRAHLUNG EMISSION AT HIGH ENERGIES. A.B. Migdal. Doklady Akad. Nauk S.S.S.R. 96, 49-52(1954) May 1. (In Russian)

A quantitative examination of the problem of brems-strahlung emission, during which the electron energy is limited only by the condition $E \gg mc^2$, is presented. It is shown that for the emission of quanta with energy much less than the energy of the electrons classic mechanics and the classic theory of emission can be used. (J.S.R.)

3-1-55

168T61

MIGDAL, A. B.

USSR/Nuclear Physics - Mesons

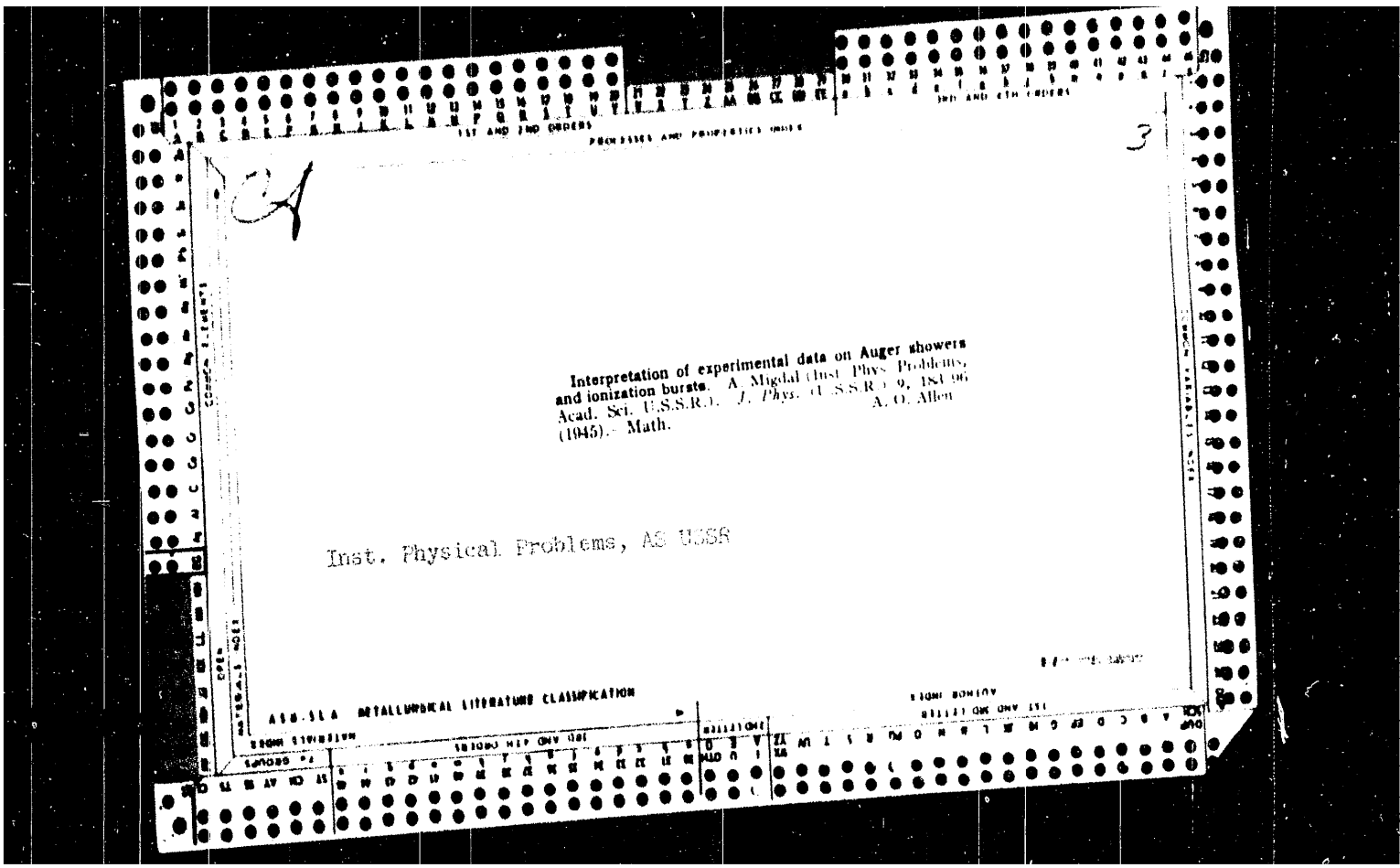
Jun 50

"Artificial π-Mesons," A. B. Migdal, Ya. A. Smorodinskiy

"Uspekh Fiz Nauk" Vol XLI, No 2, pp 133-153

Discusses artificial production of π-mesons using Berkely cyclotron in 1947. Lists only four Soviet sources, all for the introduction on varitrons.

168T61



Interpretation of experimental data on Auger showers and ionization bursts. A. Migdal (Inst. Phys. Problems, Acad. Sci. U.S.S.R.). *J. Phys.* (U.S.S.R.) 9, 183-96 (1945).—Math.

A. O. Allen

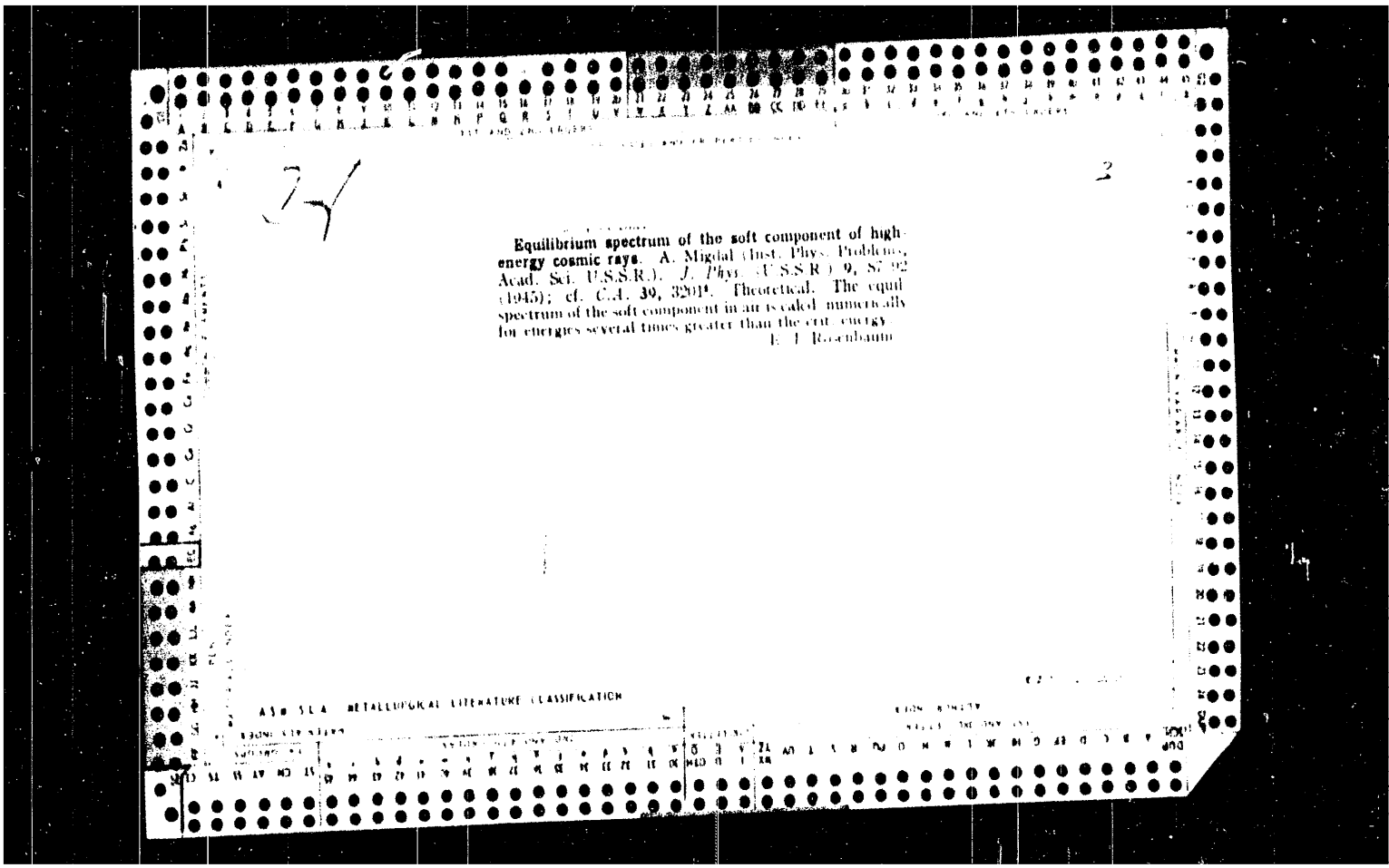
Inst. Physical Problems, AS USSR

NEDAL, A. S.

and Hoffman's Impacts"

"Analysis of Some Experimental Data on Asteroid Showers," a report presented at the sessions of the General Assemblies of IUGG in 1964.

IAM-Ser Viz, Vol 2, No 3, 1965



Equilibrium spectrum of the soft component of high-energy cosmic rays. A. Migdal (Inst. Phys. Problems, Acad. Sci. U.S.S.R.). *J. Phys. (U.S.S.R.)* 9, 87-92 (1945); cf. *C.A.* **39**, 3201[8]. Theoretical. The equil spectrum of the soft component in air is calcd numerically for energies several times greater than the crit. energy.
L. J. Rosenbaum

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Pair creation in nuclear collisions. A. Migdal (Inst. Phys. Problems, Acad. Sci. U.S.S.R.). *J. Phys.* (U.S.S.R.) **9**, No. 1, 45-51(1945).—The probability of pair creation is calcd. where one of the colliding particles is charged. The probability in α-decay and fission of U is [illegible] [illegible] [illegible]

Inst. for Phys. Problems, AS USSR

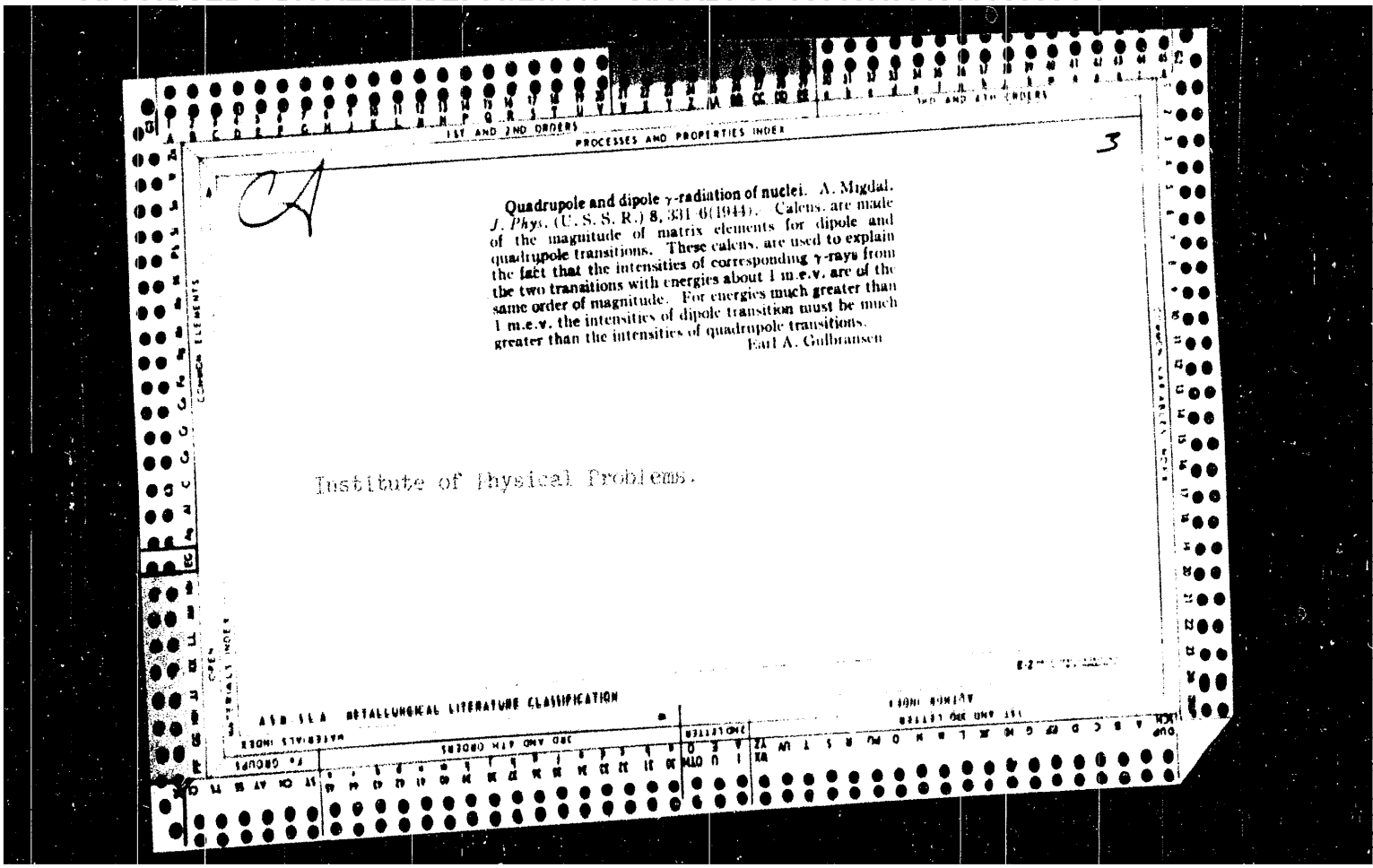
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

AUTHOR INDEX

1ST AND 2ND LETTER

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001033800004-6



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3

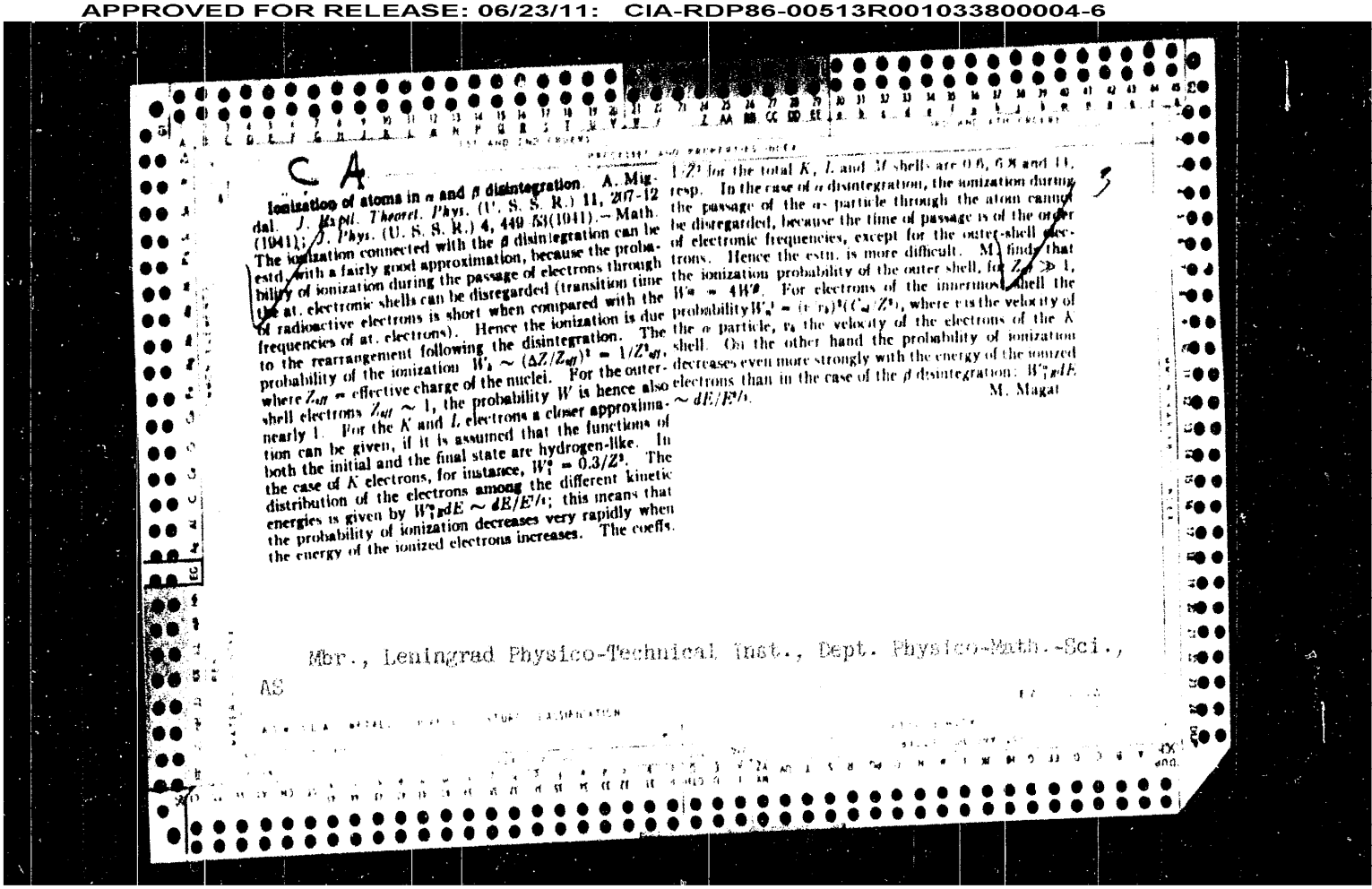
CA

Quadrupole and dipole γ-radiation of nuclei. A. Migdal. *J. Phys.* (U. S. S. R.) **8**, 331-6(1944). Calcns. are made of the magnitude of matrix elements for dipole and quadrupole transitions. These calcns. are used to explain the fact that the intensities of corresponding γ-rays from the two transitions with energies about 1 m.e.v. are of the same order of magnitude. For energies much greater than 1 m.e.v. the intensities of dipole transition must be much greater than the intensities of quadrupole transitions.
Earl A. Gulbransen

Institute of Physical Problems.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Mechanism of nuclear fission. V. Berestetzki and A. Migdal (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **30**, 706—707).—The assumptions of the Bohr-Willer theory of nuclear fission (that the max. of the potential barrier is attained for small vibrations, and that its height may be given by an expansion with respect to a parameter characterising the stability of the nucleus) are examined. It is shown that the expansion is not legitimate for real nuclei and that the life of the nucleus as derived from the theory ($\sim 10^9$ sec.) is in contradiction with experiment. H. V. S. R.



C A

Ionization of atoms in α and β disintegration. A. Migdal. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 11, 207-12 (1941); *J. Phys.* (U. S. S. R.) 4, 449-53(1941).—Math. The ionization connected with the β disintegration can be estd. with a fairly good approximation, because the probability of ionization during the passage of electrons through the at. electronic shells can be disregarded (transition time of radioactive electrons is short when compared with the frequencies of at. electrons). Hence the ionization is due to the rearrangement following the disintegration. The probability of the ionization $W_1 \sim (\Delta Z/Z_{eff})^2 = 1/Z^2_{eff}$, where Z_{eff} = effective charge of the nuclei. For the outer-shell electrons $Z_{eff} \sim 1$, the probability W is hence also nearly 1. For the K and L electrons a closer approximation can be given, if it is assumed that the functions of both the initial and the final state are hydrogen-like. In the case of K electrons, for instance, $W_1 = 0.3/Z^2$. The distribution of the electrons among the different kinetic energies is given by $W_1 dE \sim dE/E^{3/2}$; this means that the probability of ionization decreases very rapidly when the energy of the ionized electrons increases. The coeffs. $1/Z^2$ for the total K, L and M shells are 0.6, 6.8 and 11, resp. In the case of α disintegration, the ionization during the passage of the α particle through the atom cannot be disregarded, because the time of passage is of the order of electronic frequencies, except for the outer-shell electrons. Hence the estn. is more difficult. M. finds that the ionization probability of the outer shell, for $Z \gg 1$, $W_\alpha = 4W_\beta$. For electrons of the innermost shell the probability $W_\alpha = (v/v_0)^2(C_\alpha/Z^2)$, where v is the velocity of the α particle, v_0 the velocity of the electrons of the K shell. On the other hand the probability of ionization decreases even more strongly with the energy of the ionized electrons than in the case of the β disintegration: $W_1 dE \sim dE/E^3$.

M. Magat

Mbr., Leningrad Physico-Technical Inst., Dept. Physico-Math.-Sci.,

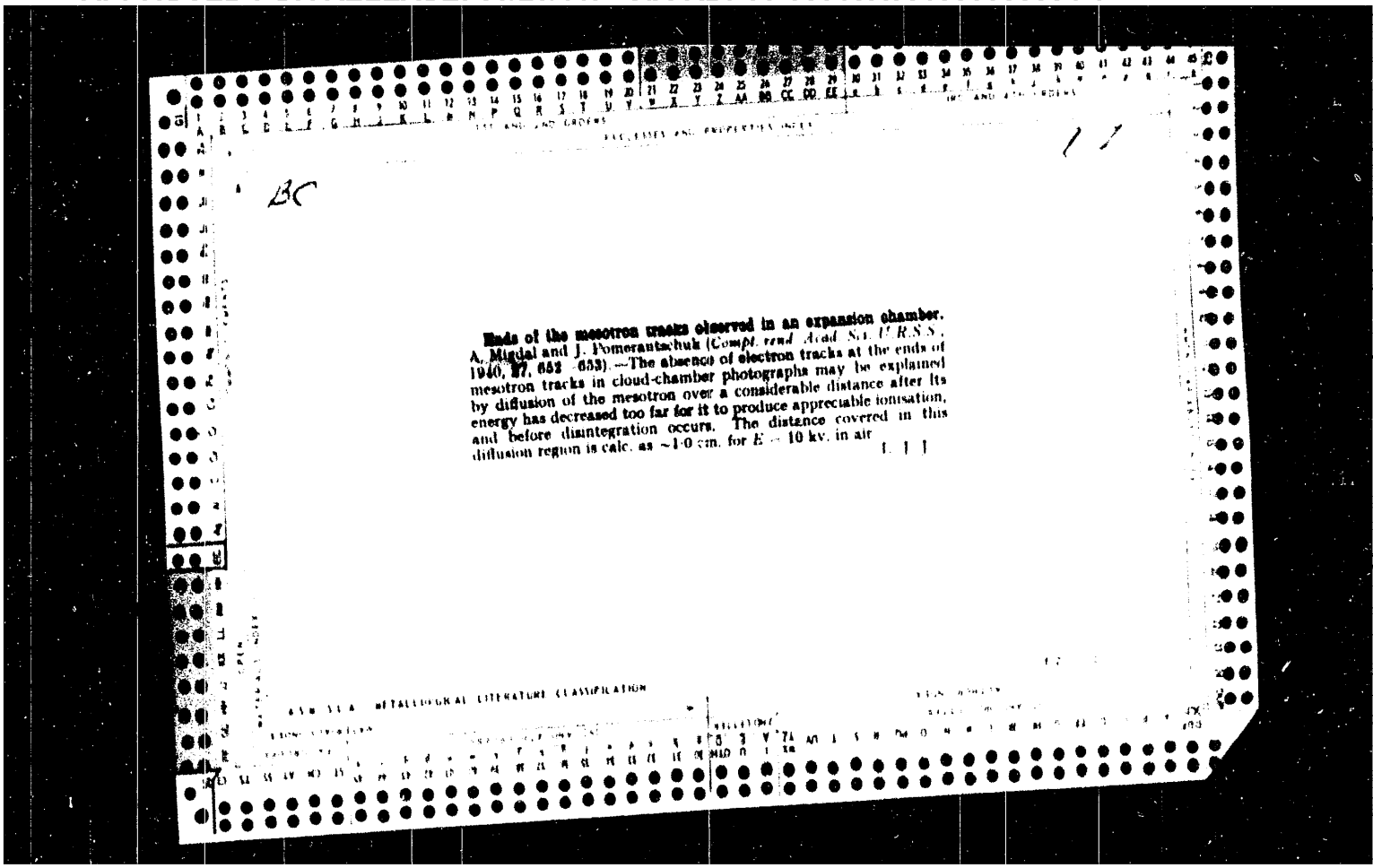
AS

MIGDAL, A. [B.]

"The Mechanism of the Fission of Heavy Nuclei," J. Phys (USSR), Vol 4, p.283, 1941

W-384, 16 Apr 48

Also: Dok. AN 30, No. 8, 1941.



Ends of the mesotron tracks observed in an expansion chamber. A. Migdal and J. Pomerantschuk (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, **27**, 652–653).—The absence of electron tracks at the ends of mesotron tracks in cloud-chamber photographs may be explained by diffusion of the mesotron over a considerable distance after its energy has decreased too far for it to produce appreciable ionisation, and before disintegration occurs. The distance covered in this diffusion region is calc. as ~1·0 cm. for $E \sim 10$ kv. in air.

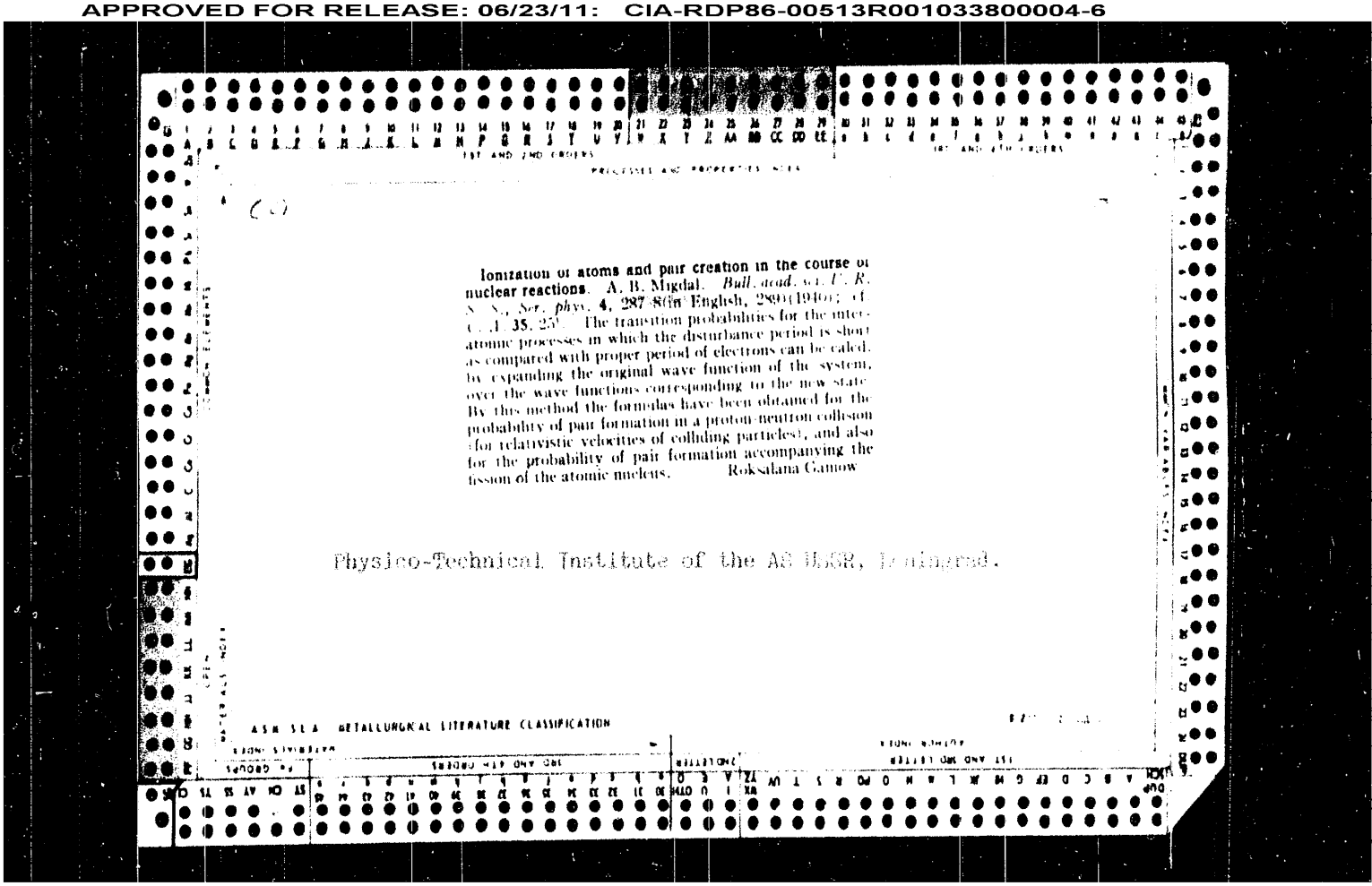
[ ] [ ]

CA

Scattering of neutrons in paramagnetic substances. A. B. Migdal. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 10, 6-11(1940), cf. C. A. 33, 3680^a. The scattering cross section of thermal neutrons in paramagnetic substances was calcd. on the basis of wave mechanics with special emphasis on the case of rare earths. In this case the cross section is given by the expression $\sigma = (0.05 + CB^2)10^{-24}$ sq. cm., where C is about 1 and B is the magneton no. ($g\sqrt{J(J+1)}$) of the element in question. For Ce, Sm, Dy and Er, B is 2.51, 0.84, 10.6 and 9.60, resp. In the case of Eu $B = 0$ and the scattering must be absent in spite of the presence of paramagnetism. Rok... Gamow

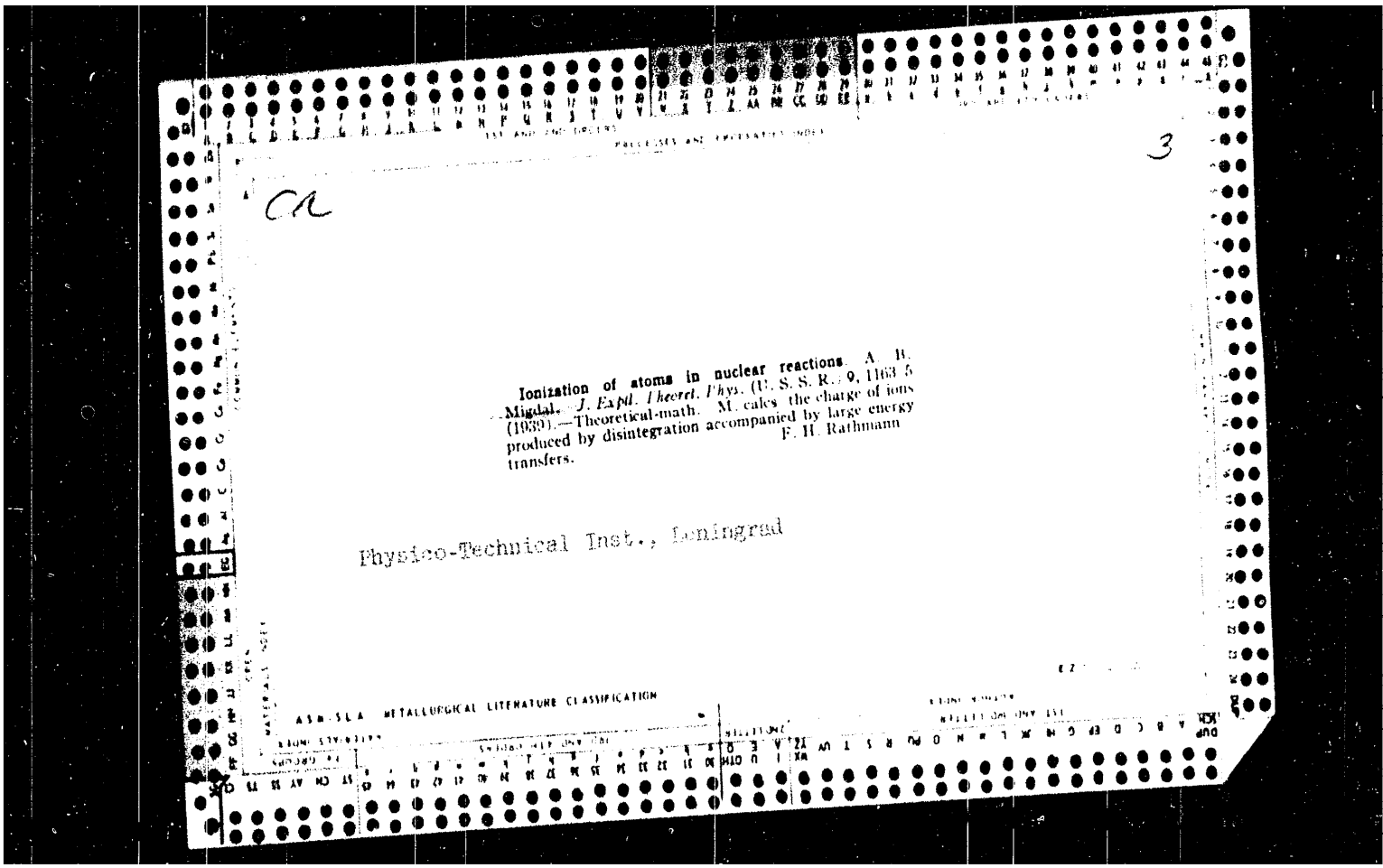
Leningrad Physico-Tech. Inst., Leningrad

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Ionization of atoms and pair creation in the course of nuclear reactions. A. B. Migdal. *Bull. acad. sci. U.R.S.S., Ser. phys.* **4**, 287-8(in English, 289)(1940); cf. C. A. **35**, 25[illegible]. The transition probabilities for the interatomic processes in which the disturbance period is short as compared with proper period of electrons can be calcd. by expanding the original wave function of the system over the wave functions corresponding to the new state. By this method the formulas have been obtained for the probability of pair formation in a proton-neutron collision (for relativistic velocities of colliding particles), and also for the probability of pair formation accompanying the fission of the atomic nucleus. Roksalana Ganow

Physico-Technical Institute of the Ac. Sc. U.S.S.R., Leningrad.



3

CA

Ionization of atoms in nuclear reactions. A. B. Migdal. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 9, 1163-5 (1939).—Theoretical-math. M. calcs. the charge of ions produced by disintegration accompanied by large energy transfers. F. H. Rathmann

Physico-Technical Inst., Leningrad

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

Scattering of neutrons in ferromagnetics A. Migdal *Compt. rend. acad. sci. U. R. S. S.* 20, [illegible] (in English).—Schwinger's equation [illegible] for the differential cross section of scattering is shown to be correct and the cross section does not depend on the magnetic nature of the neutron. George Ayers

L 45093-66 EWT(m)/T
ACC NR: AP6024873 SOURCE CODE: UR/0056/66/051/001/0135/0146

AUTHOR: Migdal, A. A.; Polyakov, A. M. 32 B

ORG: none 19

TITLE: Spontaneous violation of strong interaction symmetry and the absence of zero-mass particles

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 1, 1966, 135-146

TOPIC TAGS: vector meson, Feynman diagram, quantum electrodynamics, C invariance, PARTICLE ANNIHILATION, PARTICLE INTERACTION

ABSTRACT: The existence of zero mass particles in the presence of spontaneous violation of symmetry is considered. Summation of all Feynman diagrams yields an equation which is identical to the Bethe—Saltpeter equation for the wave function of a zero mass scalar bound state (zeron) in the annihilation channel $\bar{a}b$ of the particles for the difference between the mass operators $M_a(p)$—$M_b(p)$ of particles a and b in a supermultiplet. It is shown that in spontaneous violation of symmetry in a Yang-Mills type theory with vector mesons, the zerons interact only with virtual particles and hence are unobservable. On the other hand, vector mesons acquire a mass despite the generalized guage invariance. It is proved that an asymmetric solution corresponds to a minimal vacuum energy and that a consequence of C-invariance of the solution is the conservation of strangeness. Orig. art. has: 26 formulas. [CS]

SUB CODE: 20/ SUBM DATE: 30Nov65/ ORIG REF: 003/ OTH REF: 010

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ACCESSION NR: AP4012547

in such a potential, it is possible to apply the results obtained to a calculation of the boundary energy of Fermi nuclei. The final formula can be represented in the form

$$e_0/e_\infty = 1 + A^{-1/3} f(N/A),$$

where f(x) is given by

$x =$	0,50	0,52	0,54	0,56	0,58	0,60	0,62	0,64	0,66	0,68
$f(x) =$	1,74	1,71	1,51	1,50	1,40	1,34	1,20	1,13	1,00	0,90

and which is accurate to within 1--2 MeV. Orig. art. has: 26 formulas.

ASSOCIATION: Moskovskiy fiziki-tekhnicheskiy institut (Moscow Physicotechnical Institute)

Card 2/2

545. 16Apr63

ACCESSION NR: AP4012547 S/0056/64/046/001/0213/0217

AUTHORS: Gurvits, S. A.; Migdal, A. A.; Polyakov, A. M.

TITLE: Boundary energy of a Fermi gas in a potential well

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 213-217

TOPIC TAGS: Fermi gas, quantum mechanics, potential well, quantization, Fermi energy, boundary Fermi energy, neutron Fermi energy, heavy nucleus Fermi energy, Fermi nucleus

ABSTRACT: A quasi-classical quantization condition is obtained for a spherically symmetrical potential and is used to obtain the first two terms of an expansion of the number of particles, expressed in the form of a function of the Fermi-gas boundary energy, in powers of the dimensions of the system for this potential. The method given makes it possible to make similar calculations for any potential well with a diffused edge. By regarding nucleons as a Fermi gas

Card 1/3

2324. ON THE AETIOPATHOGENESIS AND TREATMENT OF IMPETIGO HERPETIFORMIS - W sprawie etiopatogenezy i leczenia liszaja opryszczkowatego (impetigo herpetiformis) - Migdał A. Oddz. Chor. Wewn. Szpit. Powiatow., Grodków - POL. TYG. LEK. 1958, 13/35 (1344-1349)

The author discusses the unexplained aetiopathogenesis of the disease, based on 4 cases of dermatitis herpetiformis reported by himself and the literature concerning the subject. He found in his patients a disorder in the functioning of the pituitary and parathyroid glands, acquired haemolytic anaemia (with a positive direct Coombs reaction and an increase in cold agglutinins), and damage of the hepatic and renal parenchyma. A joint action by 2 pathological factors, i.e. of the endocrine gland deficiency and a virus infection, was confirmed by the favourable therapeutic results in the 4 reported cases after administration of chlortetracycline or oxytetracycline and ACTH.

Obzant - Cracow

MIGDAL, Adam (Grodkow, Powiatowa Przychodnia Skorno-Weneryczna)

Paravaccinia & vaccination vaccinia. Polski tygod. lek. 13 no.31: 1199-1203 4 Aug 58.

1. Z Pow. Przychodni Skorno-Wenerycznej w Grodkowie; kierownik: dr A. Migdal; z Pow. Laboratorium Analit. Bakteriol. w Grodkowie; kierownik: dr A. Migdal.

(VACCINIA
paravaccinia & vaccinia (Pol))

EXCERPTA MEDICA Sec 6 Vol 13/3 Internal Med. Mar 59

1542. INFECTIOUS MONONUCLEOSIS IN THE LIGHT OF IMMUNOLOGICAL INVESTIGATIONS AND FUNCTIONAL LIVER AND SKIN TESTS. THE RESULTS OF CHLORTETRACYCLINE TREATMENT - Mononukleoza zakaźna w świetle badań immunologicznych oraz prób czynnościowych wątroby i skóry (wyniki leczenia aureomycyna) - Migdal A. Odd. Chor. Wewn. Szpit. Powiatowego, Grodkowa - POL. TYP. LEK. 1958, 13/11 (389-393) Tables 3

Thirty cases were treated. Chlortetracycline has a rapid therapeutic effect on the fever, on inflammatory lesions in the oral and pharyngeal cavities, and on the general condition. The effect is less striking with respect to changes in the blood, lymph nodes and spleen, and other lesions. Functional liver tests, and decrease of albumin in the blood show that the liver is as a rule damaged in this disease. Functional skin tests show a stimulation of the reticulo-endothelial system and lesions of the little lymphatics and blood vessels. The appearance of jaundice in the course of the disease is caused by a destruction of erythrocytes by incomplete antibodies.

Łukaszewicz Dańcowa - Warsaw (L, 6)

MIGDAL, Adam, (Grodkow, pow. Opole, Szpital Powiatowy.)

Biochemical disorders of the organism during pellagroid. Przegl. derm., Warsz. 7 no.1:49-58 Jan-Feb 57.

1. Z Oddzialu Chorob Wewnetrznych Szpitala Powiatowego w Grodkowie Ordynator: dr A. Migdal. Z Powiatowego Laboratorium Analitycznego w Grodkowie. Kierownik: dr A. Migdal.

(PELLAGRA
biochem. disord. in pellagroid (Pol))

MIGDAL, Adam, (Grodkow)

Azotniak and its relation to health of workers during spreading.
Polski tygod. lek. 11 no.11:489-494 12 Mar 56.

(FERTILIZERS, injurious effects,
(Pol))

MIGDAL, Adam, Grodkow, ul. Sienkiewicza 56

Behavior of eosinophilic leukocytes and of skin and liver function tests in allergic skin diseases treated with nitrogen mustard in small doses. Polski tygod. lek. 10 no.1:7-13 3 Jan 55

1. Z Pow. poradni skorno-wener. w Grodkowie; kier. dr. med. A.Migdal

(SKIN, diseases
allergic, eff. of nitrogen mustard ther. on leukocytes behavior & skin & liver funct. test)
(NITROGEN MUSTARDS, effects
on leukocytes behavior, skin & liver funct. test in ther. of allergic skin dis.)
(SKIN, physiology
eff. of nitrogen mustards in ther. of allergic skin dis.)
(LIVER FUNCTION TEST, in various diseases
skin dis., allergic, eff. of nitrogen mustards ther.)

MIGDAL, Adam

Nitrogranulogen therapy of allergic diseases of the gastrointestinal system. Polski tygod. lek. 9 no.12:362-366 22 Mar 54.

1. Z Oddz. Chorob Wewnetrznych Szpitala Pow w Grodkowie, zast. dyrektora: dr. A.Migdal.

(ALLERGY, manifestations,
gastrointestinal, ther., nitrogen mustards)
(GASTROINTESTINAL DISEASES,
allergy, ther., nitrogen mustards)
(NITROGEN MUSTARDS, therapeutic use,
allergy of gastrointestinal system)

MIGDAL, A.; KALUZYNSKI, H.

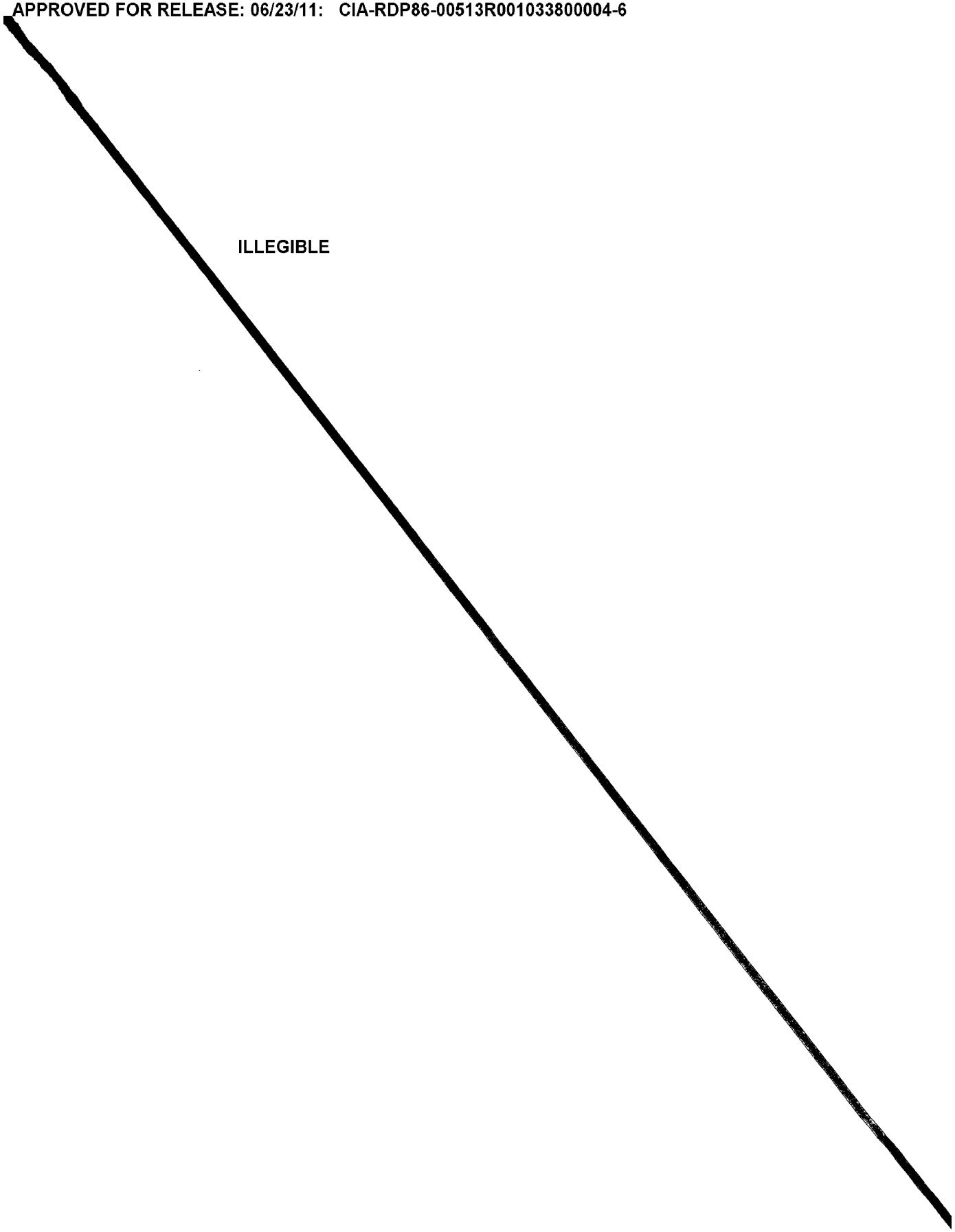
Attempts to treat allergic skin diseases by nitrogranulogen. Polski tygod. lek 7 no. 41:1277-1281 13 Oct 1952. (CLML 24:1)

1. Of Grodkow District Dermato-Venereological Consultation Center (Head--Adam Migdal, M.D.) and of Niemodlin District Hospital (Director--Henryk Kaluzynski, M.D.).

MIGDA, Tadeusz, mgr., inz.

Pipe rolling mills. Przegl techn 81 no.18:17-19 '60.

ILLEGIBLE



MIGAY, V.P.

Effect of gases on the structure and the graphitization of cast iron. Metalloved. i term. obr. met. no.11:35-36 N '63. (MIRA 16:11)

1. Vsesoyuznyy zaochnyy mashinostroitel'nyy institut.

MIGAY, V.P.

Effect of gases on the character of ferrite grain boundaries in cast iron. Lit. proizv. no.7:37 Jl '63. (MIRA 17:1)

MIGAY, V.P.

Effect of vacuuming on the structure and graphitization of cast iron. Lit. proizv. no.2:20-21 F '63. (MIRA 16:3)
(Cast iron--Metallography) (Vacuum metallurgy)

MIGAY, V.P.

Vacuum treatment of gray cast iron. Lit. proizv. no.1:25-26 Ja '63. (MIRA 16:3)

(Cast iron)
(Vacuum metallurgy)

MIGAY, V.P.

Reorganization of melting departments in foundries. Lit.proizv. no.9:42-43 S '62. (MIRA 15:11)
(Foundries--Equipment and supplies)

MIGAY, V.P.

Reducing the gas content of a foundry atmosphere during electric arc furnace operations. Lit.proizv. no.7:42 Jl '62. (MIRA 16:2)

(Air--Purification)

[redacted], V.P.

Mechanism for the operation of cupola bottoms. Lit. proizv. no.12:31 D '61. (MIRA 14:12)

(Cupola furnaces)

S/128/60/000/010/013/016/XX
A033/A133

On the utilization of centrifuges in...

height of rotor rim - 120 mm; full rotor holding capacity - 240 liters; maximum rotor speed - 430 rpm; drive motor power - 40 kw; drive motor speed - 980 rpm; output (molding sand containing less than 2 - 3% clay) - 5,000 kg/hour; overall diemsnions: length (with motor) - 3,490 mm; height - 2,380 mm; width - 2,240 mm; weight (with motor) - 7,670 kg. There is 1 figure.

Card 3/3